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# Needed Changes in Stallion Registration*

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WE live in a great state, a state famous for its wonderful agricultural resources, and its vast live stock industry. Our population is fast increasing. The great ranches and ranges of the West are fast being transformed into farms. The depopulating of these vast areas of their cattle, is, year by year, making it more incumbent on the Middle West, to grow and maintain more live stock. Soil experts are constantly demanding more live stock to preserve the fertility of our lands. From across the water there comes the urgent call for more wheat and more meat. The crying demand of the times is for more and better live stock production.

For years past, all of our progressive farm and live stock periodicals, our agricultural colleges, our live stock associations, our farmers' institutes, and similar agencies, have been busily engaged in educating our farmers and stock men to this end, and have urged progression by the use of pure-bred sires. The public auction, stock-judging contests, our county and state fairs, the National Dairy Congress, the great International Live Stock Exposition, and all other leading live stock shows, have been instrumental in exhibiting concrete examples of the most profitable types of the different breeds to grow. The Federal Government, anxious to lend a helping hand, has placed veterinarians throughout the country, to educate the people along the proper lines of sanitation and the control of contagious diseases, and thus husband the health of our valuable live stock. In different sections of our country, they have also established "studs," destined to produce a particular type of horse.

In many of the states, laws have been enacted, calculated to assist and make it easier for stockmen to breed better animals. It is now a felony to turn at large on any of our great western ranges other than a pure-bred registered bull, while in a majority of our states laws have been enacted regulating the public service of stallions. It is this particular statute in our own state that I shall discuss.

"Like produces like, or the likeness of some ancestor." This is a maxim as old as history itself, and constitutes the basis or fundamental principle on which the superstructure of all theories pertaining to the science of heredity are builded. It is applicable to the offspring of all animals—man and beast alike. The lovable "Old Granny" sees in the red-faced countenance of the newborn babe, the eves of the mother; the ears and nose of "papa"; the forehead of the maternal grandpa; the chin and mouth of the paternal grandpa, and so on *ad infinitum*. As he grows to maturity, he develops the peculiar voice and drawling speech of his father's fam-

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ily; the poise and walk of his mother's people. "Old Granny" moving away to another state, and returning after twenty-five years, with almost unerring accuracy, can separate into family groups of Smiths, Browns, and Whites, the entire younger generation born to her friends during her absence.

Likewise persons familiar with the ancestry of animals can usually trace a strong family resemblance to some near or remote relative. He may exhibit the color and markings of his paternal grandsire, and perhaps to a great degree the outward conformation of his maternal grandsire; the action and gait of his sire; the habits and disposition of his dam, etc. So strongly marked are these features, that one is often led to remark, "He looks like a Nutwood", or to inquire "Is this a colt sired by So and So?" and in 90 per cent of cases the presumption is correct.

Certain desirable family characteristics may be greatly intensified by judicious mating with a sire belonging to a family possessing similar virtues; or objectionable conformations may be overcome in a large measure by the continued use of sires, with predominant characteristics of opposite type and conformation, as regards the points where improvement is desired. *Intelligent breeding consists in selecting a satisfactory, desirable type of animal, and adhering strictly to the production of that particular type for several generations.* An animal bred after this manner will make a very prepotent sire, transmitting his inherent characteristics to all his progeny to a very remarkable degree. All of the great sires of all the different breeds have been produced in this manner. Likewise, all the improvement in the characteristics of the different breeds has been accomplished by the intelligent use of great sires. In some instances, a single animal has popularized an entire breed. How important then, that we place on our statutes no stallion law that will prove a detriment to the breeding problem, but rather one that will assist and make it easier for the average stockman to know good horses, and to raise them.

The primary and ultimate object of a law to regulate the public service of stallions and jacks, should be the improvement of the quality of horses and mules raised. A law that produces that result is a good law; vice versa, a law that fails in that single particular is of no value, and may be worse than none at all. Sufficient time has elapsed since the enactment of our first law regulating the public service of stallions and jacks for impartial judgment to be made as to its success and the benefits derived therefrom.

Ask one familiar with the enforcement of "stallion laws" what benefits have been derived thereby, and he will invariably answer, "We have far fewer grade stallions now standing for public service than we had at the enactment of the law, and we have exposed several stallions standing on fraudulent pedigrees". It is quite true that we have fewer grade stallions standing, but is this due to the action of the law? We also have fewer grade bulls; by far less grade boars; fewer grade bucks. Stockmen have been, and are fast being educated as to the benefits of using not only pure-bred sires on their mares, but also on their cows, their sows, and their sheep. I have no doubt but that the percentage of grade sires eliminated, has been far greater among the cattle, sheep, and swine than it has among horses. The grade stallion is fast eliminating himself, not so much because of "stallion laws" as from lack of patronage in any community where there is a pure-bred competitor of equal quality. Place the right kind of a pure-bred stallion in a locality close to your grade, and the grade will at once cease to be a menace to the breeding public. The value of any horse, no matter whether he be of the heavy draft, or of the light harness type, depends not on how much weight, or how much speed, nor yet on the pedigree he possesses but depends entirely on his individuality, and you can neither expect nor demand patronage for an inferior stallion simply on account of his pure-bred ancestry. A mediocre animal has no place in the category of sires, no matter how rich his pure-bred heritage. There are by far too many "stud horses" in our country today, but there is an

absolute scarcity of good successful sires. Only the very best of our pure-bred colts should be saved for stallions, and the others should be unsexed, for it is bad policy to spoil a good gelding in order to make a very poor stallion. Not only will this be of benefit to the horse industry, but it will be an economic gain as well; there is more profit in a $150.00 gelding at three years of age, than there is in a $300.00 stallion at this same age, as the latter must be raised at far greater expense.

In the operation of a "stallion law," aside from the horse industry, there are various individual interests concerned. A stallion from colthood to maturity, usually passes through the successive ownership of three persons; the breeder or the man for whom the colt is foaled, the stallion dealer, or the man who purchases said colt from the breeder, fits, develops, and sells him to the stallioner or owner who keeps said horse for public service.

The interests of the breeder are identical with those of the horse business in general. He is concerned in growing the very best foal that is possible from his mare. If he has wisely mated her with a successful sire he has reason to hope that the resulting foal will be an improvement over the dam. Should it be a horse colt, he either expects to grow him to maturity, and stand him for public service, or he hopes to dispose of him at the first opportunity. Usually this farmer is a small breeder possessing only a few pure-bred mares, and he is not desirous of keeping a stallion that will interfere with his urgent farming operations, hence the colt is for sale as soon as he is weaned. A few years ago, many stallion dealers made a specialty of purchasing this class of colts, and developing them to the age of usefulness as sires. These men were good feeders, they understood how to secure the maximum growth, and they were supplied with special facilities for that purpose. The effect of the stallion laws of all states wherein a certificate of soundness is required in order to secure a license, has been to almost entirely eliminate this branch of the stallion business. It is claimed that the risk of the stallion becoming unsound or blemished in such a manner as to disqualify him for a license is too great. One might purchase a likely looking colt, for a goodly sum, possessing the very best conformation, and giving great promise of developing into a very high-class stallion, when suddenly he becomes blemished in such a manner as to render him ineligible to a license in Illinois. The market for this particular colt, as a stallion, would then be restricted to states wherein this particular blemish does not offend the law, and while this colt might be of such a type and quality as to go into almost any neighborhood, and measureably improve the quality of horses in that locality, there is no alternative but to castrate him and sell him for a gelding. Consequently, the stallion dealer of today is restricting his purchases almost entirely to animals of useful breeding age, and is more than ever demanding that they be already fatted and fitted for immediate sale, in order to eliminate from his own expense account the element of risk necessarily incurred by the growing and developing of young immature stallions. On this account it is now extremely difficult for a farmer to dispose of his surplus young stallions until they have attained the age of rising three years. Inasmuch as the farmer has other interests that demand his attention, and occupy his time, the stallion colt is more often neglected than otherwise. He is not pushed for a maximum growth and consequently never attains the degree of excellence that he would have done had he passed into the dealer's hands for development. It takes generous feeding and care to develop to the maximum the best qualities of a stallion, and therein lies the secret of our horsemen across the water. Nearly all the stallion foals in France are contracted from their owners while they are yet nursing their dam, and pass into the hands of stallion dealers who are artists in this particular line. The horse industry of this country would be benefited were this the custom here. The result of our stallion law, however, is to cause the farmer to feed his colt one to two years longer than

formerly; the stallion dealer restricts his purchases to mature animals; and the stallion is not developed into as large and valuable an animal as he would otherwise have been.

The next man directly affected by a stallion law wherein soundness is a necessary requisite for a license, is the stallion owner, who usually purchases his animal from the stallion dealer, or perhaps from his breeder, and stands him for public service. This man is a benefactor to his community, and to him more than to any other one source, is directly traceable any improvement in the quality and character of horses raised in his locality. We assume that he has purchased an individual particularly suited to his locality, to secure which he has been compelled to pay a price commensurate with his value. At the time of the purchase the stallion is sound, but suddenly, through an unavoidable accident, he sustains a blemish that disqualifies him from further service as a licensed stallion. Castration and financial loss follow, with the result that this man either goes out of the stallion business entirely, or if he purchases another stallion, rest assured that he will buy a cheaper one. Thus the horse business is injured, and both the community and the owner suffer as a result.

Coming down to our present law as recently revised, I quote from that part only in which we as veterinarians are directly concerned, and to which I invite your earnest and impartial consideration.

> Sec. 2. In order to obtain the license certificate herein provided for, the owner or owners of each stallion or jack shall forward an application and the fee to the Department of Agriculture, together with an affidavit executed by said owner, or owners, or by a graduate veterinarian acceptable to the Department of Agriculture to the effect that such stallion or jack is free from hereditary, infectious, or contagious disease or unsoundness, or in the event of said stallion or jack being unsound, the nature and extent of said unsoundness shall be specified in the application, a notation of which shall be embodied in the certificate of license issued as follows: Amaurosis, bog-spavin, sidebone, navicular disease, curb, chorea, string-halt and roaring.

During the operation of the law before its revision, it was necessary that a licensed veterinarian examine all stallions and make affidavit as to their soundness. For some reason this did not prove satisfactory, as it is quite evident from the wording of our new law that it was the intention of its framers to entirely dispense with the examination for soundness by a veterinarian, since it clearly states that "The owner, or owners, shall forward an application for license, and the fee, together with an affidavit executed by said owner or owners, or by a graduate veterinarian *who is acceptable to the Department of Agriculture.* The inference is very plain that the affidavit of the owner is more to be desired than the affidavit of the graduate veterinarian, since the owner's name is first mentioned, and the qualifying statement follows that the graduate veterinarian must be one "who is acceptable to the Department of Agriculture." In other words, the affidavit of any owner is entirely acceptable, but the affidavit of a graduate veterinarian must be viewed with suspicion. As evidence that a certificate of soundness attested by an affidavit from a veterinarian is not even desired, I quote from the latest book issued by The Stallion Registration Department, Division of Animal Industry, page 13, sec. 2, as follows: "Examinations by veterinarians are not now required, but the owners themselves must make affidavit as to the soundness or unsoundness of their animals, etc."

I leave it to your imagination, as to why the affidavit of the average stallion owner would be more acceptable than the affidavit of the average veterinarian. In the case of the average owner, I have usually found that although fully capable of discerning a blemish on the other fellow's horse, their own was always sound. In the case of a veterinarian making a false affidavit relative to the soundness of a stallion, the courts would readily convict him of perjury, since he would be presumed to know when an animal was sound and when unsound, but the owner could readily hide behind a plea of ignorance, and in the majority of cases escape the penalty. For these reasons several states that formerly accepted the "owner's affidavits," now refuse to do so.

There is no question but what a veterinarian or some one other than the

owner should examine all stallions, both as to soundness, and to ascertain whether or not the stallion for whom the license is sought, corresponds to his pedigree in color, markings, age, etc. Numerous fraudulent pedigrees have been unearthed and many unintentional errors rectified through such examinations. However, in my opinion, the examination of a stallion for a license should never be conducted by the local veterinarian. In saying this, I desire it to be strictly understood that I am casting no reflections on our veterinarians, 99 per cent of whom have always been conscientious in their work, but I am speaking from the standpoint of his own welfare. Our fees for this class of work amount to so little, year by year, that in the event that we are compelled to disqualify a man's stallion, it sometimes happens that we lose that man's work and influence. I know, personally, of several instances of this kind, and I have always claimed that the veterinarian has not directly benefited, financially, from our stallion laws.

Under our present law, stallions affected with the following named diseases are classified as unsound, and all owners of stallions so effected must so plainly state and enumerate them in their license and all other advertising matter: Amaurosis, bog-spavin, sidebone, navicular disease, curb, chorea, stringhalt, and roaring.

It is quite natural to assume that the law presumes these unsoundnesses to be of a heritable nature, otherwise there would be no object in making mention of them in the license, any more than there would were the animal blemished by a wire cut. There is considerable room for discussion regarding the relative heritable tendencies of some blemishes. However, rest assured that the stallion owner always knows, and is able to convince his prospective patron, that there is nothing whatever of a hereditary nature about the unsoundness, and that his horse will not transmit it. However, if these diseases were actually considered as heritable unsoundnesses by the framers of the law, they should have constituted a bar to receiving a license If in their opinion, they were not of a heritable nature, then it would seem quite unnecessary to direct the attention of the prospective patron to them. Personally, I consider some of them as heritable as any of the diseases named as constituting actual bars to receiving a license. However, I consider it an eminently fair and just proposition between owner and patron, and I believe it will make for real progress in our laws, if every stallion be given a very careful examination, and every disease and faulty conformation found, posted on his license. This puts it squarely up to the owner of the mare, knowing her defects, to consider the defects of the stallion, and use his own judgment as to what risk he incurs by patronizing a stallion so affected.

Sec. 3. The presence of any one of the following named unsoundnesses shall disqualify a stallion or jack for public service; periodic ophthalmia (moon blindness); bone spavin; ring-bone; curb when accompanied by curby conformation of the hock; or any contagious or infectious disease.

It is quite natural to assume that "the contagious or infectious diseases" must refer to such as glanders, *maladie du coit,* etc. As the animal affected with these diseases would quite likely be under quarantine, they need not demand our attention. Taking the others in their order:

Periodic ophthalmia. In every state wherein a stallion may be disqualified on account of unsoundness or blemish, periodic ophthalmia constitutes a legal bar to securing a license. In the light of recent investigations, the results of which must be accepted by all intelligent, thinking veterinarians, the etiological factor of this disease has been conclusively proven to be of bacterial origin. The isolation of the specific germ, the reproduction of the disease by inoculation into healthy eyes, and certain other definite facts, stamp this as true beyond all question. Periodic ophthalmia is no respecter of eyes, being as apt to attack the very best looking eye in the herd, as it does the inferior looking eye. When it has attacked one eye in a herd, other cases in that herd are almost certain to follow, irrespective of any relationship they may bear to each other. It usually follows some weeks or months

later as a sequel to an attack of influenza, distemper, or other mixed infections affecting the respiratory tract. There is no appreciable difference in the progeny of a stallion, regarding susceptibility to periodic ophthalmia, between foals sired before the stallion himself became affected, and those sired after he became affected. I have personally known of seven stallions affected with periodic ophthalmia, and I must conscientiously say that never did the get of a single one of those stallions develop periodic ophthalmia to any greater extent than the offspring of average stallions not so afflicted. Of one in particular, after doing 11 years' stud duty in my locality, the last three years of which he was blind from this disease, I have yet to discover the first affected eye among his progeny although his last get have now reached the ages of fifteen years or more.

Periodic ophthalmia should not disqualify an extra high-class stallion from public service, but for its psychological effect on the laity, and for the benefit of the horse business in general, a stallion so affected that does not possess superior merit should be barred.

Ringbone. The presence of a ringbone permanently disqualifies a stallion in the state of Illinois. There is no ideal conformation that will positively exempt a stallion from the development of a ringbone, due to the fact that it is often the result of external traumatism. However, there are undoubtedly certain heritable conformations of the pastern that predispose the offspring of certain animals to the development of this disease. The stallion with a long pastern, that stands too straight at that point, or the one with the too crooked pastern, are defects that should disqualify a stallion for receiving a license more readily than should the actual presence of a ringbone on pastern of good conformation, because those predisposing causes are faulty conformations that will quite likely be transmitted to his get, and contribute quite materially to the early development of a ringbone. On the other hand, the stallion with good conformation at that point, will transmit that good conformation, and unless his offspring meet with some extraneous cause, he will never develop a ringbone. Thus I maintain that the stallion standing too straight or too crooked on his pasterns should be disqualified, but an animal of superior merit, and possessing good conformation at that point should be allowed to stand, even though he actually possesses a ringbone.

Bone-spavin. There is no question of the influence that hereditary faulty conformation exerts on the entire group of hock blemishes. The crooked hock predisposes the animal to the early development of not only bone-spavin but also bog-spavin and curb. Added to this is the too straight hock which while not easily curbed, is a strong factor in the etiology of both bone-spavins and bogs. Such hocks should disqualify a stallion, even though he technically cannot be called unsound, because there will be found among his get, just as many animals that will develop bone-spavins and curbs, as though he himself were actually so diseased. However, I question the wisdom of a law that would disqualify all stallions actually possessing a bone-spavin, for a bone-spavin often develops on a hock of excellent conformation, and in such cases no heritable tendency will be transmitted to offspring to develop that blemish.

Curb. A curb, when accompanied by a curby conformation of the hock, disqualifies a stallion for public service. On first thought, this seems a reasonable and just provision, but is it? A curb can be placed on the best hock conformation imaginable, just as can a bone-spavin and bog, and in such case that curb will not be transmitted nor will a heritable tendency to curb readily be transmitted, and in this case, a stallion so affected is entitled to a license under our law, and quite justly so. However, this provision is radically unjust, because a stallion with a curby conformation, unless actually afflicted with a curb, can not be disqualified. A crooked hind leg in a horse is perhaps the most heritable deformity that we have to contend with in the breeding business. It is in itself, a curby conformation, and any animal of such type, no matter to what class of work he be subjected, needs only a slip

or strain to produce a beautiful curb. So long as he is by careful attention kept from developing a real curb, he can legally stand. It is only when he slips or otherwise develops the curb that he becomes ineligible for a license. Yet, who dares to claim that he will sire a greater number of colts that will develop curbs, after he himself has become curbed than he did before? Inferentially, the law presumes that even though he possesses a curby conformation, his offspring will be sound, so long as he, himself, does not actually possess a curb; but let him develop a curb, together with that curby conformation, and he at once becomes a menace to his patrons, and from that time only, he is disqualified from service. We should have a law under which it will be possible to eliminate the crooked, bench-legged horse, or the horse with curby conformation, regardless of whether he actually possesses a curb. This is not possible under our present statute.

The value of any horse, whether of heavy draft, express, coach, runner, light harness type, or pony, depends primarily on his own individuality, and not on so much gross weight, or so much speed. We may have two full brothers, color and marking exactly alike; weighing in the same notch, and both sound, but one sells for $150.00, and the other for $300.00, due to his individuality. We need a stallion law based on individuality so that we may eliminate the medium and inferior stallion regardless of his claims to soundness. Our laws are based entirely on the hypothesis that certain diseases are transmissible, but inferentially one gathers that the malformations inviting such diseases are not heritable. The reverse of this is true. Barring syphilis, the direct transmission of any disease from parent to offspring is unproved. The conformation predisposing to the development of disease is what is transmitted. At no time did I ever know of a stallion with a good conformation at the point of his blemish transmitting to his offspring any predisposition to an unsoundness at that point. Did you? We need a law that will permit us to disqualify a stallion of faulty conformation, and yet allow us to retain a very superior individual, even though blemished, if his conformation at that point leads us to believe that his offspring will inherit no predisposing influence to develop that blemish. Coupled with this we need an examining board uncontaminated by political, or other influence, which will do its duty toward eliminating the "scrub pure-bred," as well as the "mongrel" grade. Then when we shall have educated the farmer to the fact that the dam who carries the foal for eleven months, and from whose blood every atom in the anatomy of that foal is nourished, deserves at least one-half of the responsibility in the production of an ill-shaped offspring. When we have eliminated from our harems about one-half of our mares, then, indeed, will we have been instrumental in the production of a better breed of horses. After all, in the education of the farmer and stock man lies the real future success of all our breeding operations. You cannot legislate good breeding sense into the people; you must educate them. So long as syphilitics, tubercular wrecks, degenerates, and imbeciles suffer no hindrance in entering the marriage relation, we may readily believe that the mass of the people are not much concerned about breeding problems.

But, you ask, is it possible to frame a law that will do justice to all concerned, with the ultimate result of producing a better race of horses? I believe that such a law is possible. I have in mind the fundament of a law, based entirely on the principle that a stallion should be licensed and permitted to propagate his kind, solely because of his evident superior individuality, rather than as at present, rejected on account of some technical blemish or unsoundness, which not a single one of his offspring may ever develop. It need only differ materially from our present law in sections two and three, the principal changes being as follows:

1st. An examining board in each county, consisting of one veterinarian, one qualified horseman, and the County Advisor, who shall make a careful examination, and a notation of all unsoundnesses and faulty conformations shall be made on each license issued.

In all disputes and appeals from their de-

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Von Osten (at the left) and Krall testing Han's self-consciousness.

# Horse Sense*

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## I

## The Experiments

WILHELM VON OSTEN, son of a landed proprietor of Schoensee near Thorn, in East Prussia, was born November 30, 1838. He seems to have been employed in early life as a common school teacher of arithmetic and drawing. He was fond of riding and hunting. In 1866 he moved to Berlin and bought the house at 10 Griebenow strasse, where he lived a secluded life, occupying two rooms on the fourth floor, and renting the other apartments.

It is curious that remarkable investigations into horse psychology should have been ushered in under such unfavorable conditions—a paved court-yard in the rear, partly enclosed by the house, approached through the usual coach door, and paved streets outside,—no grass, no pasture, no tanbark even, for a horse to stretch his legs and pound his hoofs upon. Von Osten's first horse, a Trakene stallion, kept in a neighboring stable, died after giving to its owner many evidences of intelligence. It was several years afterwards that, the idea of educating a horse having matured in his mind, von Osten acquired in Russia, in the spring of 1900, a second black stallion, of the Orloff breed, and recommenced with renewed determination his experiments in animal education. This horse became the celebrated Kluger Hans, or Clever Hans, whose career was so meteoric. Krall's book demonstrates that the downfall of Hans was unmerited, and explains the system of von Osten and the much more far-reaching results achieved by Krall himself. Notwithstanding the improvements and refinements introduced by Krall, it would be a personal and historical injustice to overlook the originality and pioneer claims of von Osten.

The present article will endeavor to furnish a necessarily brief sketch of the methods of von Osten, of the bitter and cruel controversy over the performances of Kluger Hans, and of the new pedagogy and its remarkable results as achieved by Krall. A discussion of the cultural significance of the combined work of the two men forms the conclusion; and it is hoped that the present writer will be pardond for an attempt to lay an emphasis upon the importance of animal psychology which, to persons hitherto unacquainted with it, may seem excessive.

### A Man of Iron Will

Von Osten was a man of iron will. His type is easy to classify. There are not infrequently to be found persons who, their main interest in life once discovered, never thereafter relax their pursuit of it, but hold on like grim death until the end comes. Of such stuff are made martyrs and pioneers. It is also true of many persons that they inherit or are born under the sway of a decided taste for some calling, sport, animal, or plant. The love for "horse flesh," as it is called, is perhaps the strongest of these irresistible attractions. The man who does not acknowledge it, will always be a failure with horses, whether as sportsman, equestrian, or veterinarian. The man who possesses it will never be able to keep away from horses. To love horses overmuch, however, is an obstacle to handling them in a commercial way. If we add to these traits of loving horses and of inflexible will that of a bachelor recluse, we have the character of von Osten.

His idea was to test horse intelligence not by the traditional training but by affording the same education that is given to man, so far as possible. The proposition is extremely simple: if man's acquisition of education is the proof of his intelligence, then another animal which proves itself capable of assimilating the same education must be taken to be intelligent also. Academic discussion as to what intelligence may be is thus, for the

*Karl Krall, Denkende Tiere, Friedrich Engelmann, Leipzig, 1912, pp. 532.

time, eliminated. The plain syllogism, above stated, is the one to which von Osten devoted his strength and the later years of his life. Like the first flight of the Wright brothers or the voyage of Columbus, a slight accident might have deranged all plans, and the future of knowledge been deprived of its due, until a substitute should offer to begin all over again. The premature death of Kluger Hans (who may be still living, so far as the present writer knows) might have shipwrecked bright hopes; the prejudices of German professors nearly did so. At this point, Karl Krall, of Elberfeld, came upon the scene and, by his great acumen and untiring devotion, put the movement on a basis of solid, scientific record.

Necessarily, the account here offered must be brief. The complete history is of intense interest, and the best that can be done is to give glimpses here and there, while the public hopes for the appearance of a much needed, unabridged translation of Krall's excellent book.

**Obstacles to Animal Education**

The education of man begins with numbers and alphabet, and is continued with arithmetic, reading and writing. How can animals, so differently constituted physically, follow the educational career prescribed for man? Monkeys have organs resembling those of man, but Professor Garner and others have found these animals extremely flighty. They have "flutterbudget" minds. The horse, on the contrary, is capable of prolonged attention, as every *"écuyer"* knows; his defect is that he has hoofs instead of hands. Remedy this defect, and the teacher may proceed with a colt as he would with a child.

Evidently, the horse can only rap or tap, as the spirits do. It is conceivable that the horse may be supplied later on with a planchette or be taught the Morse signals. But, in approaching the problem for the first time von Osten wisely concluded to let the equine schoolboy familiarize himself with an alphabet written on a checker board, the ordinates and abscissas of which are numbered. By looking at the board, which we may call his letterboard, the pupil is able to indicate the abscissas with taps of the right hoof and the ordinates with taps of the left, and thus locate the desired letter. A reproduction of the German letterboard, as improved by Krall, is shown herewith.

The pupils at first had no choice of language although they later on made some progress in French and English. For counting, only the treadboard was necessary. Von Osten taught Hans to count always with his right hoof, except that the next to last tap was to be given with the left. Krall greatly simplified matters by teaching the three horses to count units with the right foot, tens with the left, hundreds with the right, thousands with the left, and so on, alternating. Thus, one hundred and twenty-five would be five taps with the right foot, followed by two with the left, and then one with the right. This is very simple, if one has the brains to do it. Horses have.

**Major-General Zobel Introduces Kluger Hans To the Public**

Kluger Hans was brought to the notice of the public by Major-general Zobel, in an article entitled, "The Reading and Reckoning Horse," which appeared in the *Weltspiegel*, July 7, 1904. The author's name was sufficient to attract attention. He states: "The purpose of the pains von Osten has taken with the horse is to prove that a thorough-going disciplining of the horse's mind enables it to attain independent

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|---|---|---|---|---|---|---|
| 10 | e | n | r | ss | m | c |
| 20 | a | h | l | t | ä | ch |
| 30 | i | d | g | w | j | sch |
| 40 | o | b | f | k | ö | y |
| 50 | u | v | z | p | ü | |
| 60 | ei | au | eu | x | q | |

Horse's letterboard improved by Krall, showing alphabet.

thought and action. He gladly submits the horse to every test by strangers, and guarantees that upon better acquaintance with a stranger it will give the same results as with its instructor. One would hardly believe it possible for the horse to read, reckon, count, recognize persons from their photographs, and describe them in its own way. It understands the German language, gives answers to a quantity of questions, and, like a child, does everything that its master asks. . . . After I had learned the method of putting questions, Hans solved a lot of examples for me. . . . Whether the performances of the stallion be the result of a new way of training, or of a mental development attained through methodical instruction, they are astonishing and unique and deserve scientific investigation."

The article of Zobel attracted much attention. It afforded newspaper men capital material for "stories." The press teemed with the most exaggerated accounts of the performances of Hans. The crowds that flocked daily to visit him—there was no admission charged to the humble courtyard at 10 Griebenow strasse—were so great that the police were obliged to be present in force to preserve order in the street and to prevent the obstruction of traffic. The army, the nobility, the wealthy, and the learned were liberally represented. All was *couleur de rose*.

**Serious Purpose of von Osten**

But von Osten was no random guesser. He was working for a fixed object, the recognition of animal intelligence, and he felt entitled to the credit due to a discoverer. He, therefore, earnestly desired authoritative sanction for his work, which should put its authenticity and reality above suspicion and should record his achievement indelibly. He was certainly entitled to what he modestly requested. But the path of glory is fraught with dangers. Science might draw different conclusions from his, conclusions which might be opposed to his and might minimize his efforts in the place of magnifying them; and that is just what happened.

A self-formed committee constituting the "September, 1904, Committee," considered simply the question of tricks, and decided favorably that no tricks were employed—the work of von Osten was honest. But what booted it to this old man to be called honest and nothing more? Consequently, in October, 1904, a second committee was formed to pass upon the main issue, whether von Osten had succeeded in teaching his horse to think. The committee comprised the head of the psychological department of the Royal University of Berlin; Privy Councillor, Professor Dr. C. Stumpf, as chairman, and his two assistants, O. Pfungst, student of medicine and philosophy, and Dr. von Harnbostel, as secretary.

They had Hans all to themselves for a long time and decided finally, in December following, that Hans could not think. They sidestepped the difficult problem of what thinking is, for they came to the conclusion that Hans was a mere mechanism, which obeyed the involuntary motions and gestures of the interlocutor. Now this might have sounded very well, if it only had been true. But it wasn't. Luckily, a good angel appeared upon the scene in the person of Karl Krall, who has devoted years and money to disproving the report of the scientific commission. But we anticipate. Let us borrow an extract from the report of the commission: "When even a so exceptional teaching talent and a so incomparable patience as that of Herr von Osten, by daily practice during four years, could superinduce no trace of conceptual thought, the ancient contention of philosophers that animals are unfitted for it, has been reinforced for the animal kingdom up to the stage of development of hoofed animals, by this experiment of a high order."

There is then, here, a back door of escape, or at least a good basis for reply, in the phrase, "conceptual thinking." But von Osten and Krall would not avail themselves of it. Their contention *flat-footedly* covered conceptual thinking; it was, *Aut Caesar aut nullus*—A horse's thinking is as good as a man's.

Pfungst was apparently the strong will of the commission. At least, Stumpf, who had previously warmly

testified to the thinking powers of Hans, gave over to Pfungst the lead in the investigation. Here was a chance for a young man to make a reputation. The claims of the old crank were all bosh anyhow, as every scientific man must know, and all that was necessary was to show him up in a grand way. One scents the commercialism which has of recent years hovered over German science; and also the pandering to the crowd mind and the sitting on the fence, which go with it.

### Involuntary Signals

The experimental proof turned about the involuntary signals. Pfungst wrote a book on the subject, from which Krall quotes: "When I compare these values measured in the laboratory with these observed by Herr von Osten, so as to obtain at least by estimate a measure for them, I (Pfungst) must say that Herr von Osten's nods were smaller than almost all those that I have recorded, at most a fifth (1/5) millimeter (or, looking at the brim of his hat, a half more). . . . Herr von Osten, when two meters away from the eye of the horse, raised his head about one-fifth millimeter (so that even the extreme values are indicated)." . . . Pfungst's book, "Das Pferd Herrn von Osten," p. 120. Pfungst's book did not appear until March, 1907.

But Krall was thoroughly committed to the campaign for animal intelligence, and followed close on the heels of Pfungst with laboratory experiments of his own to test the psychological signaling value of small motions. "A head cut out of card board about the size and shape of von Osten's was fastened to a sort of rocking arrangement, which permitted of various motions. By a system of levers, invisible to an observer, the head could make little nods of one-fifth millimeter (measured at the point of the nose), and besides, these could take place while the whole head slowly swung to and fro like a pendulum."

Krall found that, when the head was not swinging, a series of observers, by close attention, could perceive the nods not more than one-fifth of the time, that is, not more than one-fifth, on the average, of the nods; while, if the head were swinging, thus reproducing more nearly actual conditions, no one could see any nod, although they were made continuously.

Professor Stumpf had said that the reason the public did not see the nods was because von Osten was always moving about. How could Hans see them any better than the public? The distance of view for the experiments was two meters. Similar results were independently reached by Dr. A. Basler.

### Criticism Inconsistent

Unquestionably Stumpf and Pfungst, during their period of authority over Hans, trained him to act on signals. They admitted it and were proud of having trained him better than his master had. In other words, they gave up entirely the idea of education, and then presented their results as a refutation of the independent thinking of animals. Of such stuff, apparently, is Pfungst's book made up. Truly there be science and science. Too often the boasted agnosticism of the petty acolytes of science is but a boorish balking against anything new, and so-called technical investigators are but professional obfusticators.

However, the December report of the scientific committee was a stunning blow to von Osten's pride and ambitions. The public accepted the decision and the courtyard at 10 Griebenow strasse was again deserted. A good chance was offered to yellow journalism to crack cheap jokes, and the public (especially in Germany) is not to be satisfied unless it is furnished fresh victims to "thumbs down." The Germans do not seem to be happy unless they are persecuting somebody. This national vice is notorious in the army, the schools, the universities, trade; in fact, it pervades all German society. It is the cause of the World War. The statement of the Commission that Hans must see his interlocutor was absolutely false, when he was working freely. The most extraordinary thing was that, while Hans sometimes gave wrong answers, it also happened that the questioners themselves, even von Osten, calculated wrong, while the horse calculated right, and stood horsefully by his own opinion until it

was accepted. Of such matters the scientific commission took no account.

### Von Osten Persecuted By Yellow Journalism

Here is a sample of "considerate" treatment from the *Koelnischen Volkszeitung* (Dec., 1904): "The end of the educated Hans. At last the monstrous sea serpent has been taken out and buried. . . . But Hans has beaten the long-distance record of sea-serpents, for up to shortly before Christmas there never had been any, anyhow. In fact, nothing could possibly have given me greater Christmas joy than the report of Mr. Prof. Dr. Stumpf, of the ninth of this month, upon the incapacity of our dear Hans to think, to count, to read, and to reckon, and also upon the self-deception, established in the same report, of Messrs. von Osten and Schillings. My joy is double: in the first place, the sermon that the Herr Professor preaches over the dead Hans informs me that we do not yet need to despair for humanity. That is my chief joy. Secondly, I am also glad—and this is wholly human—because, in my three articles contributed to the *Koelnische Volkszeitung*, I hit the nail squarely on the head." Pages of yellow nonsense of this sort appeared in the papers and were religiously recorded by Krall. He laughs best who laughs last.

### Hans' Education Continued

In some such frame of mind as this, Krall now set to work to improve the methods of von Osten. He worked all his spare time with the old man and Hans alone in the deserted courtyard, save for the tenants in neighboring houses, who did not hesitate to throw down sand bags on the tireless toilers. So chivalrous! Hans was provided with a big blinder on the side toward the interlocutor, so that he could not see the latter. He was taught to touch with his nose, numbers printed on cards, and to pick them out and indicate their order; to pick out written names hung up in any order; to tell which foot one was moving; in which hand one held his cane; to tell how far off he could see a thing (proving that he could see two and one-half times as far as the average man); to count spots, no matter how confusedly arranged; to distinguish accurately colors and all shades of the same; to count lighted candles; to distinguish the varying brightness of lights shining through orifices; to distinguish straight from crooked sticks, light from heavy sounds, smells of all sorts; to count pricks on his skin; and to pay attention to the slightest sounds. For many of these experiments, instruments of precision were designed and constructed by Krall, so that the rooms of the kind carpenter and family, who lived off the court, looked like a veritable psychological laboratory. All these feats, and many more, were done after the days of glory, and after the jackals of journalism and the panderers of pedantry had had their horse-laugh.

### The Master Dies

But von Osten was getting old. His end drew near. He had worn himself out and could no longer look for earthly recompense. He died, June 29, 1909, at his country place at Sternberg in Neumark, which he had made his regular residence since July, 1907. He died cursing Hans for the misfortunes of his life. He certainly regarded Hans as an individual. And the pastor "described at the grave very aptly the solitary world-aloofness in the character of the lonesome hermit, his striving for truth and his battle with the world, without attributing to the departed, qualities of heart that did not belong to him. The farewell word was addressed to the one who strove in vain, who was self-deceived, who thought himself an investigator and discoverer." The pastor also had caught the contagion; but pastors are mortal.

Hans was bequeathed to Krall, and within a week was safe and sound at the latter's home in Elberfeld. The neighbors watched Hans' departure with friendly interest, and 10 Griebenow strasse knew him no more. He had been in the courtyard for years, but behaved very sensibly on his way to the freight station in Berlin.

"Behind the clouds is the sun still shining." The course of true success is to wring victory from defeat. Krall brought fresh blood and wider experi-

ence into the game, for in this pragmatic world we cannot hope for truth absolute. We should not recognize it, if we saw it. What we are after is a proposition that works. This does not mean a popular proposition, for they are precisely the ones that do not work. The stupid prejudice that animals are unfeeling, brute mechanisms does not work; it never did. The world has reached a point where it must formulate something better. Krall, the man of the world, succeeded von Osten, the recluse, as the champion of the spirituality of animals.

(*To be continued*)

# Hog Cholera

By G. E. STANLEY
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*Awarded Second Prize in American Journal of Veterinary Medicine's Essay Contest Offered to Students of the St. Joseph Veterinary College*

HOG cholera is the most highly communicable, and the most generally prevalent disease affecting swine, being both infectious, and contagious, and may appear in either an acute or chronic form. No breed of swine is immune to it, although some are more resistant than others, individuals of the same breed differing widely in their degree of susceptibility.

The first outbreak of hog cholera in the United States, occurred in Ohio in the year 1833, and from that time it has gradually spread, until now it is found in every state in the Union.

The earliest record we have of it, was in England, in the year 1826. Information obtained from various sources, indicates that hog cholera has been prevalent in America for the past thirty or forty years. The average annual loss in the United States for the past forty years will probably exceed $50,000,000 and in 1897 the losses due to this disease alone, approximated $100,000,000.

During the years of 1912-13, a severe outbreak of hog cholera extended throughout the principal hog-raising sections of the United States, the loss being very great, totalling over $100,000,000 each year.

In 1913, there were 61,178,000 swine in the United States. of which ten to fifteen per cent died of cholera. The losses from cholera in 1912, in Iowa, Kansas, Nebraska, and Missouri exceeded 3,000,000 hogs valued at $30,000,000. The losses in the state of Iowa alone for the years of 1911-14, have exceeded 10,000,000 annually. Hog cholera is no doubt the most fatal disease to swine in America, and at this time is the most important disease from an economic standpoint.

## The Causative Factor

The causative agent of hog cholera has never been definitely ascertained. It was long thought that the bacillus suisepticus was the determining etiological factor of this disease, but this has been disproven, as subsequent experiments have proved conclusively that this micro-organism is not the true causative agent of this disease, as it was found that blood from animals suffering from cholera would produce this disease even after it had been passed through a filter which removed bacillus suisepticus. This gave rise to the belief that the etiological agent lay in the filter itself, a filterable virus, the exact nature of which has never been determined, as science has not yet succeeded in isolating it.

The causative agent of hog cholera, the filterable virus before mentioned, is found not only in the blood of infected hogs, but in the urine and feces.

## Method of Transmission

Dr. Dorset, in a paper read before the Missouri Valley Veterinary Medical Association in January, 1914, gave the following estimate of the relative productivity of various sources of infection, placing the greatest burden of responsibility upon the human element.

Visitation of neighbors carrying the causative agent on their shoes from infected herds, is responsible for 33 per cent of the outbreaks.

Birds carrying the infecting medium, 27.5 per cent of outbreaks.

Dogs are responsible for about 6.5 per cent.

Streams about 8 per cent.

Hogs in adjoining premises, 4.5 per cent.

New Stock from infected sources 10 per cent.

In some 6.5 per cent of new cases the infection is traceable to local causes due to improper sanitation.

### Period of Incubation

The period of incubation after natural infection is variable, depending upon the virulency of the virus and the resistance of the infected swine.

In most instances the temperature rises from the fifth to seventh day, and the animals will be visibly sick by the tenth day after infection. The period of incubation in inoculation experiments varies from four to seven days.

Owing to the fact as before stated, that hog cholera manifests under two principal forms, the acute and chronic, with different symptoms in each, it is often difficult to properly diagnose. Even after autopsy we do not always find structural changes sufficient to account for the animal's death. This is explained by the rapidity with which the disease works, often causing death before it has had time to produce the lesions one would expect to find in a clearly marked case of cholera, and which would have been present had the animal lived long enough for these manifestations to present themselves.

### Acute Symptoms

At the beginning of an outbreak of acute hog cholera, it is quite common to see one or two small hogs refuse to eat, and lag behind the remainder of the herd.

These hogs will soon return to their sleeping quarters and will burrow down into the nest as though from cold. Usually they seem to be weak in the hind quarters, they stand cross-legged, and when walking they wabble and stagger about as though they were drunk. Their ears, which are hot, and feverish, hang down loosely, the tails are straight, and backs arched.

Either diarrhea or constipation may be present. In many cases conjunctivitis, which is usually followed by swelling and partial closing of the eyes, will be noticed.

Respiration will be hurried, and well marked skin lesions will be noted in the region of the abdomen, under the arm pits, and on the inner sides of the thighs.

Evacuations are often covered with mucous and streaked with blood. Diarrhea usually follows constipation, due to the decomposition of food stuffs in the alimentary canal. Vomiting is not unusual. The temperature will be high, often rising from 107 to 109° F. When handled the pig has a peculiar squeal, and has very little power of resistance. At this stage the animal generally manifests depression, followed by stupor, coma, and death.

### Chronic Symptoms

In the chronic form, cholera presents misleading symptoms, a few of the smaller animals show symptoms of slight illness, not all alarming; they continue to weaken for a period, sometimes, of several weeks, when they finally recover or die. They usually have a fair appetite, which leads the owner to think the trouble is due to the presence of intestinal parasites.

In the more severe stages of chronic cholera the symptoms are similar to those of the acute form, although very much modified, the more prominent characteristic being digestive disturbances, alternating diarrhea and constipation, a characteristic cough, a variable appetite which gradually fails, causing the animal to become weak and emaciated.

In some cases excessive inflammatory changes develop, which result in sloughing of the back, sides, head, and neck; the temperature may go as high as in the acute form, but will return to normal, and may even fall below, before death.

### Post Mortem Findings

The lungs in acute cases only will show petechiae, but in chronic cholera, lobular pneumonia, pleuritic adhesions, or other characteristic exudates that attend such inflammatory conditions may be present.

The abdominal organs will be well marked with petechiae, and on careful examination of the mucous surface of the stomach and intestines, a gastro-enteritis may be found, petechiae may also be found on the mucous lining of the stomach, trachea, and bladder.

In chronic cases, ulcerations will be found throughout the alimentary canal, particularly in the region of the ileocecal valve, where they will be very prominent. Where these ulcerations occur the tissue presents a necrotic appearance, either gray, yellow, or black in color.

The spleen is somewhat enlarged and engorged with blood in acute cases. But in cases of chronic cholera, the inflammatory process having continued for a considerable length of time, becomes necrotic and leaves the spleen smaller than when normal.

The liver may exhibit similar conditions and undergo the same structural changes.

The glands will show hemorrhagic lesions and will be greatly enlarged, especially those in the inguinal region.

The kidneys are congested and petechial, especially in acute cases. In the chronic form the structural changes are similar to those which occur in the other organs of the abdominal cavity.

Following is a record kept of conditions found by postmortem examination of 100 carcasses of hogs which had cholera within a period of from six to fourteen days from infection. And while these figures cannot be relied upon as being absolutely accurate the author believes that these cases form a fairly representative list of the conditions that may be expected in an ordinary postmortem for acute hog cholera.

| | Per cent of cases |
|---|---|
| Diarrhea present | 23 |
| Skin hemorrhagic | 26 |
| Intestines hemorrhagic | 80 |
| Lymph-glands hemorrhagic and enlarged | 90 |
| Kidneys hemorrhagic and petechiated | 90 |
| Spleen petechiated | 85 |
| Spleen enlarged | 12 |
| Spleen hemorrhagic | 95 |
| Pleural adhesions | 3 |
| Bladder hemorrhagic | 27 |
| Lungs showing red hepatization | 13 |
| Lungs grey hepatization | 2 |
| Lungs petechiated | 97 |
| Lungs necrotic | 3 |
| Lungs hemorrhagic | 92 |
| Other diseases present | 3 |

Average temperature during disease was 106.8° F.

### Diagnosis Often Difficult

The diagnosis of hog cholera is often very difficult. The symptoms evidenced may cause a clinician to suspect cholera but the diagnosis should not be based on symptoms alone. The intestinal lesions, that is, the tumefied lymphoid tissues, necrosis, and ulcerations that so commonly occur in the intestinal form of cholera, may occur in the intestines of swine not infected with filterable virus.

Necrosis and ulceration may have been observed as a result of infection with the bacillis necrophorus, and these lesions have been observed in swine that have been fed excessive quantities of ferrous and copper sulphate.

The study gives assistance in the diagnosis of cholera. The pneumonic lesions are relatively common in cases of cholera excepting in the pre-acute type. The lesions in the lung resemble croupous pneumonia in some stages and involve the cardiac and frequently the cephalic lobe, but this cannot be considered characteristic of cholera as it is the typical lesion of croupous pneumonia, but when it occurs in conjunction with subserous and submucous hemorrhages, congestion and hemorrhages of the lymph-nodes, and discoloration of the bone-marrow, the evidence favors the existence of hog cholera.

Swine plague is characterized by catarrhal pneumonia in the early stages, and by necrotic pneumonia in the later stages, and by fibrous pleurisy with or without adhesions, which makes differential diagnosis fairly easy.

The principal diagnostic lesions of cholera are submucous and subserous hemorrhages, congestion and hemorrhages of the lymp-nodes, discoloration of the bone-marrow, croupous pneumonia of the cardiac lobe of the lung, history of the outbreak, and whether or not any swine have recently been introduced, must always be taken into consideration.

### Prognosis

The acute form of cholera is nearly always fatal, fully ninety per cent of the affected swine dying.

The intestinal form is less fatal and has a tendency to become chronic, the course in such cases varying from one week to two or three months.

### Vaccination Only Remedy

There is no known cure, the only treatment being the use of an anti-hog cholera serum, used as a prophylactic.

Extreme care and technic must be observed in the use and administration of serum, as any carelessness on the part of the operator may produce bad results.

The day before vaccination, the animals should be placed in clean well ventilated, disinfected pens, and should be put on a light diet of shorts or middlings moistened with water. Corn should not be fed, and there should be plenty of clean drinking water available. This care should be continued for eight to ten days following vaccination. The bedding should be changed daily while the animals are confined before and after vaccination.

Unnecessary confusion and excitement should be avoided in handling hogs, as this has a tendency to cause high and misleading temperature. For this reason, it is well, where possible, to have the herd divided into groups according to the room available, making it easier to catch and handle each individual animal and avoid over excitement of the herd.

Pregnant sows should not be placed in pens with the herd, and especial care should be taken to prevent abortion. Never cast them, but snub them to the post instead, and administer serum in the neck back of the ear. The practitioner should never underrate the importance of his own example, in the manner in which he handles his instruments and his personal habits of prophylactic caution. He should wear freshly laundered white trousers and jacket or long coat when administrating the serum treatment.

Previous to the administration of serum, the area of infection should be thoroughly cleansed with a good antiseptic solution, dried thoroughly, and tincture of iodin applied with a small camel's hair brush.

A second bucket of antiseptic solution should be reserved for washing the hands of the operator. It is also desirable to have an additional tray containing a good antiseptic solution for the syringes and needles when not in use. A similar cup or tray should be provided for virus needles. The water for the solution should always be fresh and pure, and must never be taken from the watering trough or other contaminated source. The veterinarian should provide himself with one or two syringes, of not less than 30 c.c. capacity for the administration of serum, and a syringe of from 5 to 10 c.c. capacity for the virus. An extra supply of needles should accompany the outfit.

Syringes, needles, instruments, iodin, and the bottle of serum and another containing virus, should be placed on a table which must be provided and placed in such a position that it cannot be jarred or overturned by the animals or by the awkward movements of the assistants. All instruments must be sterilized immediately before using. Wash the hands thoroughly in antiseptic liquid immediately before beginning to operate, and keep them clean during the entire course of administering the treatment. Leave the handling of the animals, placing of the thermometer, scrubbing, etc., to the attendants. The veternarian should attempt to do nothing but the actual vaccination and sterilization of the injected areas.

When the animal to be vaccinated is thrown on its side or back, and when held up either by the hind or fore legs, the serum should be injected either into the side of the ham or, preferably, into the arm pits where the tissue is loose. When the hog is snubbed up to a post the serum may be injected into the muscular tissue near the crease in the back of the ear. In either case always inject deep into the muscular or loose deep connective tissue, never subcutaneously. The virus should be injected in the opposite side, or at least a considerable distance from the area of injection of the serum.

It is not advisable to inject more than 15 c.c. of serum into one area, in inserting the needle pull the skin a little to one side so that when the needle is removed the opening in the skin will not be in direct opposition with the one in the muscle. This will prevent the escape of the serum and lessen the danger of infection. Immediately after withdrawing the needle at the completion of the treatment, paint the area of the injection with tincture of iodin, as a precautionary measure against the possibility of infection.

The best results can be had by vaccinating in the early morning or late afternoon, when the heat has abated. Keep the containers of serum and virus cool and carefully closed at all times when not in actual service. This is essential as a necessary precaution against the ever present danger of infection from dust and dirt which are so frequently the sources of contamination.

**Dosage**

Sucking pigs should receive 15 c.c. of serum alone for temporary immunity when they have been exposed to cholera, or where there is danger of exposure. After being weaned, pigs should receive 3 c.c. per 10 pounds body weight.

When virus is used simultaneously with serum, pigs ranging from 40 to 60 pounds in weight should receive 1 c.c. of virus. Pigs ranging from 60 to 100 pounds should receive 2 c.c. of virus, hogs weighing 150 pounds and over 3 c.c. Hogs already infected with cholera and having elevated temperature should receive from 25 to 50 per cent more serum than those not infected.

Never give serum in large enough doses to be out of proportion to the virus given. Otherwise, you cannot hope for a permanent immunity to follow as the virus will be neutralized before reaction is produced. Always give a well balanced dosage of virus and serum under any and all conditions in sick as well as healthy herds.

**After Care of Vaccinated Swine**

It is always desirable to keep vaccinated hogs in dry, sanitary quarters for eight to ten days after vaccination, observing the rules previously given for feeding during this period. Where this is not practical, the animals may be allowed to run on short clean grass that is free from weeds, high grass, stubble, or rank vegetation. They must not be permitted to roam in high grass or in stubble fields or to have access to muddy quarters, streams, or wallows. To allow them to do so is only to expose them to danger of infection to the area of injection, leading to the formation of abscesses or other more serious diseases or complications. The veterinarian should always impress these facts on the mind of the owner, as failure to do so may result in unfortunate misunderstandings in case of development of disorders among swine after the work of the practitioner has been completed.

If the vaccination is properly done, and the foregoing instructions are carefully followed, the treated animals will seldom miss a feed. Usually, however, the serum treatment (more practically the simultaneous method) will cause a slight febrile reaction, and the temperature may vary several degrees from normal for a period of days, sometimes going as high as 105°, or even higher. Within from six to ten days, however, the animal should return to normal conditions, with a temperature at about 102 to 103°.

The farmer should be advised of these probabilities before the veterinarian leaves the premises, so that he may know what to expect, and therefore be prepared for these symptoms without being unduly alarmed. After completing his professional work the veterinarian should be careful to see that all his outer garments, his shoes and operating clothes are thoroughly disinfected before going to another farm. This is a necessary precaution against the danger of carrying infection to a herd which has not been exposed to the disease.

The veterinary profession must impress upon the farmer the importance of scientific and sanitary procedure in this work, and to accomplish this the veterinarian must be scrupulous in the observance of the nicest details of asepsis and of caution.

There will never be a time when the serum treatment in infected herds will

be 100 per cent effective. Some animals are by nature so susceptible to cholera that no amount of serum injected into them will save them from the disease. Two factors must always remain beyond the control of the practitioner, the natural resisting power of the individual animal, and the degree of virulence of the attack. But the losses due to hypersusceptibility of the animals and to the carelessness in the technic of the veterinarian should not exceed one or two per cent of all animals vaccinated, and in most herds there should be absolutely no losses from these causes. Given a pure and potent serum and a strain of virus that is reliable, the licensed graduate veterinarian, by following the line of procedure herein indicated, should be able to reduce to the minimum the losses due to hog cholera.

The practitioner has not fully discharged his professional obligations to his client or the public after vaccinating the herd until he has advised the owner as to the proper means of disposing of the carcasses of cholera-infected hogs and the disinfection of premises in such manner as to prevent a subsequent outbreak as soon as the young stock has been born.

Bodies of all hogs that have died of cholera should be burned. All buildings, pens, and sleeping quarters should be thoroughly cleansed, all infected bedding and manure should be burned, walls and ceilings of infected quarters should be brushed and sprinkled with a five per cent solution of liquor cresolis compound, phenol, or a similar solution, after which they should be whitewashed. Floors should be treated with the same agents. Fresh air and sunshine should be given every opportunity to penetrate the infected quarters, which should be kept as dry as possible.

# A Study of the Character of the Feces Due to Various Foods in Connection with Anthelmintic Investigation

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IN carrying on anthelmintic investigations, it is frequently important to know whether an anthelmintic is purgative or constipating in character, whether purgations given with anthelmintics are adequate or inadequate, etc. Certain diets are prone to cause free evacuation, while others tend to cause constipation. Since these facts should be considered in the administration of anthelmintics, I have kept some notes on dietary influences which are given for what general interest they may have.

Data for over 100 dogs in a series of 325 dogs used in anthelmintic investigations are available, as to the effect of the nature of the food on the character of the feces. The consistency and color of the feces were noted after 230 feedings which were given as follows: Bread, 86 feedings; cooked meat, which consisted of small particles of ground meat from which the bouillon had been extracted, 46 feedings; uncooked meat, usually beef heart and tongue, 46 feedings; bone with attached raw meat, 17 feedings; a combination of bread and uncooked meat, 31 feedings; a combination of bread and bone with attached raw meat, 4 feedings. The character of the feces on those days when factors other than the nature of the food seemed to be operative, is disregarded. Such factors, which might influence the fecal consistency and color, would be: (1) the anthelmintic used, since the anthelmintic itself usually imparts a decided color to the feces (a greenish color in the case of oil of chenopodium or a black of color in the case of male fern); (2) the purgative usually accompanying the anthelmintic, causing a diarrheal condition; (3) constipation,

either due to the anthelmintic or to the animal's unwillingness to defecate in its cage, or to other contributory factors; (4) intestinal disorders, often resulting in diarrhea, due to bacterial or other parasitic invasions; (5) various other pathologic conditions, such as obstruction to the flow of bile, diseases of the pancreas, etc.; (6) disturbance of the factors usually governing the fecal consistency, viz., the activity of secretion, of absorption, and the amount of water drunk.

Taking up these various feedings seriatim, the following are the outstanding features in regard to the consistency and color of the feces the day following feeding:

*Bread*: The characteristic feces following a bread feeding on the previous day are light yellowish to yellowish brown in color and loose to soft in consistency. After 86 bread feedings, the next day's feces were black and soft in 3 cases; greenish brown and soft in 22 cases; light yellowish to yellowish brown and loose to soft in 48 cases; greenish brown and solid in 6 cases; yellowish and fluid in 6 cases; black to brown and fluid in 1 case.

*Cooked meat*: The characteristic feces following the feeding of this finely ground, extracted meat are dark brown to black and fairly soft. Of the 46 cooked meat feedings, the following day's feces were: dark brown to black and fairly soft in 25 cases; greenish brown and hard in 3 cases; black to brown and fluid in 7 cases; brown to green and fluid in 11 cases.

*Uncooked meat*: Uncooked meat, which consisted chiefly of beef tongue and beef heart, usually caused a greenish brown, soft to fairly hard feces, often in compact lumps, the day following feeding. In the case of 46 feedings, 3 caused black and soft feces, 38 greenish brown, fairly hard feces; 4 brownish green, very hard feces, and 1 brownish green, fluid feces.

*Bone with meat*: Seventeen feedings of bone and attached raw meat were given, and in every case very characteristic clay-colored, brittle feces, appearing in small, compact lumps, were obtained.

*Bread and raw meat*: This mixed feeding of bread and raw meat caused characteristic greenish brown, rather soft feces. Of 31 feedings, 25 caused greenish brown, rather soft feces; 1 yellowish brown, soft and fluid feces; 3 greenish brown, hard feces; 1 green, fluid feces; and 1 brown, fluid feces.

*Bone with meat and bread*: Four such feedings were given and in each case characteristic clay-colored, brittle feces in small, compact lumps, resulted.

**Diet May Be Determined by Feces**

The above data shows that under normal conditions one can determine with a fair degree of certainty, the diet on which an animal is kept, by means of the color and consistency of the feces. The usual yellowish, loose to soft feces due to the feeding of bread is usually greater in quantity than that of the harder, darker feces following a meat diet.

The softer consistency, i. e., greater water content, of the feces following a bread feeding is perhaps due to the stimulation of the mucous membrane by the undigested bread constituents, causing increased peristalsis and so hastening the transit through the intestine and thereby shortening the period of absorption. The amount of indigestible material in meat being materially less it would be logical to conclude that there would be a more complete absorption and smaller residue, and hence a more compact, solid feces. The smaller amount of indigestible content in a purely meat diet would greatly prolong the intervals of defecation; whereas by the addition of bread to form a mixed diet, the intervals would be greatly reduced. We can also expect that inasmuch as bread has a greater amount of indigestible solids than meat, the quantity of feces following a bread diet, will be greater than that following a meat diet, that is, provided the same amounts of both foods are fed.

The color of the feces is also greatly affected by the nature of the food. On a meat diet, the color is dark, due to hematin and to ferrous sulphide, formed by the action on the hemoglobin derivatives of sulphuretted hydrogen generated by bacteria in the intestine. The usual

clay-colored feces following the eating of bone are due to the calcium constituent present.

**Study of Fecal Consistencies Important**

The study of fecal consistencies due to various foods is of importance to the veterinarian as well as to the medical man. It is a matter of importance to know whether the feces are such as would be expected after a particular diet, or are altered as a result of some particular condition. Its interest in the conduct of anthelmintic investigations lies in the fact that information can be obtained as to the effect on the feces of the anthelmintic in question in bringing about a change from the normal.

For example, the feces obtained after a therapeutic dose (0.1 mil per kilo) of oil of chenopodium, given with castor oil, is usually fluid in consistency and green in color in spite of the nature of the food fed. In the case of five dogs given a therapeutic dose of oil of chenopodium, three feedings of bread were given, after which feces of a yellowish, soft character would be expected; one feeding of meat was given after which greenish brown, rather hard feces would be expected; and one feeding of bread and meat combined was given, after which greenish brown, rather soft feces would be expected; but in every instance the feces the day following treatment differed markedly from the usual and normal feces, being fluid in consistency and green in color.

The same was found to be true in the case of various chenopodium components[1] tested in our anthelmintic series. Dogs were given the following preparations, followed immediately by 30 mils of castor oil, fluid, green feces resulting in all cases on the following day.

Preparation No. 13 (the fraction of oil of chenopodium which distills up to 125° C. at 30 mm. of mercury) was given to eight dogs in the following dosage; one dog at 0.05 mil per kilo, two dogs at 0.074 mil per kilo, and five dogs at 0.1 mil per kilo. In four of the above cases, the dogs were fed on uncooked meat and in four cases on bread, the previous day.

Preparation No. 12 (the residue not distilling over at 145°C. at 30 mm. of mercury) was given to two dogs at the rate of 0.1 mil per kilo, one of the dogs being fed bread the previous day, the other being fed uncooked meat. Preparation No. 14 (the fraction not distilling over at 125°C. at 30 mm. of mercury) was given to four dogs as follows: one dog at 0.05 mil per kilo, one at 0.074 mil per kilo, and two at 0.1 mil per kilo. In each case the dog was fed uncooked meat the previous day. Preparation No. 16 (the residue not distilling over at 130°C. at 25 mm. of mercury) was given to one dog at the rate of 0.1 mil per kilo. The animal was fed meat the preceding day. Preparation No. 19 (the residue not distilling over at 100°C. at 2 to 5 mm. of mercury) was given to one dog at the rate of 0.1 mil per kilo. The dog was fed meat the previous day.

Chenopodium itself is constipating in character, and in our experiments a purgative (castor oil) was administered to insure prompt passage of the anthelmintic through the digestive tract to lessen the local and systemic effects that may result from rapid absorption of the vermifuge. If chenopodium is administered in lethal doses, or in doses several times the therapeutic dose, with a purgative, such as castor oil, the constipating effect of the chenopodium very often masks the purgative effect of the castor oil, and hard, dark feces or no feces at all result the day following treatment.

This fact is exemplified by two dogs in our tests of chenopodium components. One dog was given Preparation No. 14, and the other, Preparation No. 18 (the portion distilling below 100°C. at 2 to 5 mm. of mercury). In the first case, the dog was given a lethal dose (0.6 mil per kilo) which was preceded by 30 mils of castor oil. The following day's feces were solid, hard, and dark brown instead of the expected fluid, green feces. In the second case, the dog was given ten times the therapeutic dose (1 mil per kilo) which was administered with 60 mils of castor oil, 15 mils being given before, 15 with, and 30 mils after the ad-

[1]Hall, M. C., and Hamilton, H. C. Investigations of oil of chenopodium and the anthelmintic value of some of its components, Jour. Pharm. & Exp. Therap, 1918, V. 11 (3), Apr., p. 231.

ministration of the drug. The following day no feces were obtained instead of the fluid, green feces one might expect if the purgative were operating effectively.

### Summary

Soft light-colored plentiful feces are indicative of a bread diet. Dark fairly hard feces in comparatively small amounts are indicative of a raw-meat diet. Very dark fairly soft feces in small amounts are indicative of a finely chopped cooked-meat diet. (This seems to be especially true when the meat is fed while still warm.) Clay-colored, brittle feces in small lumps are indicative of some bone constituent in the diet.

Therapeutic doses of oil of chenopodium or distillation products of oil of chenopodium, when given with castor oil, usually cause greenish, fluid feces, regardless of the diet.

Excessive or lethal doses of chenopodium constituents cause constipation, in spite of therapeutic doses of castor oil, defecation being suppressed for a period of one or more days or the feces being hard and dark.

# Lameness: A Consideration of Predisposing Causes as Aid in Diagnosis

By M. H. McKILLIP, M. D., V. S.,
President McKillip Veterinary College, Chicago

THE technic of diagnosis in lameness is divided into four parts: (1) diagnosis of the region; (2) diagnosis of the exact seat of the lameness; (3) determination of the specific structures involved; and (4) determination of the pathological changes present. As success in handling cases of lameness depends upon the making of a definite anatomical and pathological diagnosis it is necessary to emphasize that to make a diagnosis of the region of the lameness only is not satisfactory and is generally without results of real value. The diagnosis must be carried farther into the realm of the specific structures involved and pathological processes. This, in the case of occult lameness (with which these articles will exclusively deal), is usually difficult.

The promptness and correctness, the finesse with which a diagnosis of this type is made by many professional men is in part due to their ability to make use of certain aids in their work. These aids consist of a wide variety of general features of the case, these features suggesting the possible diagnosis at once and excluding a large number of impossible ones that might otherwise complicate the work. It is true, even, that occasionally a correct differential diagnosis is made, and can be made only upon a proper consideration and appreciation of these general features which themselves are but distantly related to the pathological state. Before proceeding therefore, with the discussion of the examination and determination of the pathological state, it is well that these general features should be considered in their relation to lameness.

Foremost among these are the predisposing causes of lameness. Too much stress cannot be laid upon the value of a clear understanding of these conditions and upon the value of the application of this knowledge in diagnostic work. Never should one proceed with the diagnosis of an occult lameness without making a careful study of the predisposing causes that are present in the patient. The promptness, ease and accuracy of diagnosis depend upon it. Predisposing causes of value in diagnosis are many in number and will be taken up in this article and articles to follow. Most of the facts relative to them are obtained by a general inspection of the patient; some, by questioning the caretaker or owner. They are the first facts obtained in the examination of the patient and from them evolve the subsequent examination. The first predisposing condition

that must be considered is the age of the patient.

### Age of Patient

The tissues and organs of the horse reach mature form and a maximum of strength, resistance, and endurance when the animal is about eight years of age. That age we shall designate as a dividing line between young and old, not that it is a point of sudden change in susceptibility of causes of lameness, but because it is a convenient dividing line. Young animals have many predisposing causes for lameness not present to the same degree or not at all in the older ones, and the reverse also holds true. This produces a marked difference in the types of lamenesses in the two groups, some lamenesses being common in the young and not seen at all in the older patients or so rarely as to be negligible. Here, likewise, the reverse is true. The splint, for example, is a disease of the young, while navicular arthritis is a disease of the mature or old animal.

The young animal has many characteristics that are prolific causes of lameness. The immature bones, ligaments, tendons, and other locomotory structures are quite adequate for natural functions but are very apt to be injured by the uses to which the young animal is put in its domestic state. The work of the animal husbandman in producing breeds that grow up to mature size quickly, stimulates the use of animals for full work long before they have reached mature strength and endurance. These immature structures are also more susceptible to the ravages of infectious processes.

Susceptibility to infectious diseases, some of which, through general metastasis or toxemic states, affect joints, tendons, bursae and ligaments, creates a very interesting group of lamenesses in the young. As animals grow older their susceptibility to these infections decreases and in the aged there is an absence of this type of lameness as an acute entity. Subacute and chronic changes in muscular and articular structures due to infectious agencies do appear in the aged animals but they pursue a different course and are, in the majority of cases, the delayed results of infections contracted in early life.

The unnatural exertion and the awkwardness of the untrained animal when first put to service, together with its failure to exercise its instinct of self preservation, brings many young patients to the hospital, victims of lameness due to sprains and bruises.

On the other hand, qualities possessed by the young protect them from certain lamenesses. The resilience and elasticity of the anti-concussion structures prevents, to a degree, those lamenesses due to concussion. It should be emphasized, however, that this protection is neutralized to a great extent by the greater susceptibility of the immature tissues to injury by concussion. The reparative power of the tissues of the young often obliterates an injury so promptly that the faulty function may pass unnoticed.

After an animal passes the eight year, a gradual change occurs in the tissues as well as in habits which have their influence on lamenesses. Lamenesses are probably less frequently seen in the aged, on the whole, and particularly is this true of the acute types of lamenesses. The more insidious and chronic types now become prevalent.

The length of life of a horse is comparatively short. Soon after it has passed eight years of age senile changes make their appearance and progress rather rapidly after twelve years of age. Connective tissues increase in strength but lose in pliability. There is a tendency to calcification or ossification of many structures in and around articulations and elsewhere and of the insertion of ligaments and tendons. Bones become harder but less resilient. The horny structure of the foot loses many of the physical characteristics of the young and its formative power is reduced. The reparative power of all tissues becomes reduced and a response to an injury is not prompt and is apt to vary in character from that of the earlier age. Local and general aberrant nutritional and trophic conditions will appear and give rise to the hypertrophic and atrophic changes.

The older animal has acquired training, has become quiet and careful in its habits and has gained a sense of self-preservation. These acquisitions render it less likely to exposure to the dangers of ordinary traumatisms that are so fruitful of lamenesses in the young, these predisposing characteristics of the young animal, mentioned above, being entirely replaced by a new set of attributes.

It must be clear, therefore, that the lamenesses of the young and the lamenesses of the old will differ. Keeping clearly in view the fact that it is the specific anatomical and pathological diagnosis that is to be made, the importance of a consideration of the age of the patient will be better understood. Many of the lamenesses are seen in both the young and the old, but a proper diagnosis in most of these will show that there is a vast difference between those of the young and those of the old. As a matter of fact there may be but little similarity when the similarity of the region involved is excluded.

There are some lamenesses that develop with equal frequency in old and young with little or no difference in their pathology, but in the large majority of cases the factor of age can well be utilized in arriving at a diagnosis. Those lamenesses that develop only in the young or only in the old are the ones in which the factor of age is of greatest aid in diagnosis. In others, which are not confined to the one group or the other but preponderate in one the value of considering age is of less, but certain value.

# Purpura Hemorrhagica at an Army Remount

By CLIFTON W. STRODE, 1st Lt., V. C., N. A.

THE treatment described herewith has been employed at one of the auxiliary remount depots, at which all classes of horses and mules are received. Most of the animals were shipped from one thousand to fifteen hundred miles to reach this depot and considerable trouble has been experienced from diseases caused by the various cocci.

The result of the treatment here described proved satisfactory, the death rate of all cases entered in the hospital being fifteen per cent.

Purpura hemorrhagica appears sporadically throughout the corrals and stables where thousands of animals are brought together at the army remount stations. Patients are brought to the infectious wards direct from the corrals, and usually no previous history is obtainable. The patient may have had an elevation of temperature or have passed through a stage of influenza so mild as not to be discernible to the veterinarian in charge of the corrals, who inspects the animals twice daily; but in many cases tumefaction over the head, body or limbs is the first abnormality shown. About fifty per cent of our purpura patients are received direct from the strangles and influenza wards. Twenty per cent have developed strangles after recovering from purpura. Whether the lowered resistance of the animal, due to the streptococcic infections (strangles and influenza), accounts for the heavy incidence of purpura or whether the causative factor of purpura works in conjunction with these streptococci, has not been determined. No doubt any cause that lowers the resistance of an animal, such as illy-ventilated stables, under-nourishment, exposure, attacks of debilitating disease, etc., may have a tendency to increase liability to this disease, but I do not concur in the opinion that this disease depends on other diseases for its inception.

Some claim that this disease is a sequel to pharyngitis, pneumonia or influenza, but I have never seen a case develop following the first two named diseases.

The extent of the hemorrhagic and

serous exudation is an indication of the severity of the affection. The increased permeability of the vessel walls is probably due to a chemical change in the blood or to the results of a toxic material in the blood; yet it is not impossible that a protozoon within the blood stream, causing a hemolysis of the erythrocytes, could be the cause of escape of fluid into the tissues. Nevertheless, the ultimate result is auto-intoxication, as various organs fail to perform their normal functions.

There is usually a rapid transudation of the blood-plasma into the tissues in circumscribed areas. This fluid is slowly returned to the circulation.

Among the thousands of animals at a remount station, cases of purpura are always present, but the percentage is very small. Usually the first symptom noticed is sharply circumscribed swelling on different parts of the body, one part being affected as often as another. Tumefactions appearing rapidly over the body generally indicate the most serious form of the disease. When the swellings shift from one part of the body to another within a few hours, it is strongly indicative of an early fatal termination. Usually there is a slight elevation of temperature in affected areas. The swellings are tense, difficult to pit, and pitting disappears but slowly.

Swelling over the head affects respiration and sight. With the increased swelling of the nasal tracts, respiration becomes sniffling and at times difficult; becoming more labored when the larynx is involved, and evidenced by an anxious look, spreading of the front limbs and whistling inspiration. Swelling over the masseter muscles renders mastication difficult; tumefaction of the pharyngeal mucous membrane interferes with deglutition and passage of the food may be inhibited. The eyes are many times involved, but usually on one side only at a time. In one case in a mule, the right eyeball was forced from the socket; the entire eyeball protruding from the lids. Improvement set in and the eye returned to its normal position, but the swelling did not entirely subside. Within seventy-two hours the eyeball again protruded and so remained for several hours, until the chambers ruptured, allowing the humors to escape. This mule made a complete recovery except for the loss of this eye.

Petechial and ecchymotic hemorrhages make their appearance in the mucous membrane. They may appear without any other visible symptoms, except tumefactions. As the hemorrhages increase in number a discharge of yellow serous fluid usually occurs. This collects upon the margins of the nostrils quite noticeably. Sloughing of the mucous membrane often occurs within the nostrils, a fetid odor and epistaxis resulting. Locomotion is impaired when either the body or the limbs are badly involved. Sometimes it is next to impossible for the animal to move for forty-eight to seventy-two hours at a time. Any exercise at this stage is harmful.

Urticaria is frequently present; it is usually found over the belly and sides of the body. After several hours a yellowish fluid, which collects in crusts on the hair, oozes from the elevations. This is especially noticeable at the joints, where deep creases form in the skin. Unless precautions are taken, sloughing of large areas of skin may result, especially over the fetlock and carpal and tarsal regions.

Nutrition is one of the most difficult ends to attain, mastication and deglutition and the appetite are impaired if the case is severe, and as various organs and glands are not functioning normally, digestive disturbances also occur, especially if the gastric or the intestinal mucous membranes are involved. If a large amount of ingesta is contained in the bowel, paralysis of the walls may result. Autopsies reveal that hemorrhages in the mucous membrane of the bowel are of frequent occurrence; in the posterior portion indications of these hemorrhages are to be found, ante mortem, in the feces.

The urine is greatly thickened, voided in small amounts and highly colored; it contains albumen, casts and

blood. The temperature varies with the severity of the attack; if the case is mild it shows very little increase, but if sepsis is present, it varies from 103 to 106° F. The heart action is increased; if septicemia is present the pulse becomes greatly accelerated but soft and weak.

From January 1st to May 1st twenty cases of purpura occurred at this remount. Of these, seventeen recovered completely. These were treated as follows:

Immediately upon arrival at the hospital purpura cases are given a careful examination and notations made of the temperature, pulse, all tumefactions, the extent of hemorrhages in the mucous membrane, the degree of epistaxis if present, and any other symptoms shown. This examination is repeated at eight-hour intervals, and the observations recorded on a chart. All swellings showing tenseness of skin are bathed in a solution containing: Alum, eight grams; lead acetate, four grams; gum camphor, twelve grams; alcohol q. s. to dissolve; water q. s. to 1000 cc. (about 960 cc. of water is required). This solution is applied freely over the tumefactions. Sloughing of the skin has occurred only in rare instances where this application has been used, and a one per cent solution of potassium permanganate, sprayed frequently over the parts, has given very satisfactory results, in these cases.

One-half grain doses of strychnine sulphate administered hypodermically at six to twelve-hour intervals, has been a routine part of the treatment. Some authorities advise strychnine sulphate until a toxic effect is manifested, but such treatment results in over-exertion, and frequently in immediate death, or in bad after-effects. Careful disinfection of the skin is essential, owing to its feeble resistance to infection when the underlying tissue is abnormal.

Thirty cc. doses of the following tonic is administered at twelve-hour intervals: fluid extract gentian 60 cc., fluid extract nux vomica 30 cc., water 390 cc. Supergation sometimes supervenes, especially if an intestinal disturbance be present, in which case thirty grams of alum are given at eight-hour intervals, until the condition becomes normal. Many patients do not move for forty-eight to seventy-two hours at a time; for such, feed and water must, of course, be within reach.

During fly time, screening the stalls adds considerably to effectiveness of treatment. Sand bedding is used and the stalls are kept as smooth as possible, and disinfected at one to two-day intervals; the feed pans and water buckets are disinfected daily. Dietetics should be watched more closely in this disease than in any other, as supergation is often caused by too much grain or alfalfa. All forage is placed so as to cause the patient to raise the head slightly from the usual plane when eating. This will often save trouble in the cervical region, and if these parts are involved, will often aid greatly in returning the tissues to their normal condition. Water must be kept at the disposal of the animal at all times, and if the mouth is badly swollen frequent injections of cold water are made into the buccal cavity. Scarification of the skin is seldom done, as sloughing is likely to follow such treatment.

As convalescence progresses the edematous condition usually disappears; if it does not, a nonirritating diuretic is given. Exercise is allowed, but must be commenced very gradually, as over-exertion results in complications and many times in death.

The hygiene and nursing is the most important part of the treatment. The animal afflicted with this malady appreciates company, as much or more than in any other disease. An important objective is to keep the patient quiet, and thereby better enable the various organs to perform their functions. All halters and anything else that will cause a pressure on any part of the body must be removed, and careless handling must be avoided, as even a slight blow will result in necrosis of the parts.

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# Are We Facing a Shortage of Veterinarians?

IN formulating a reply to this question, perhaps the experience of Great Britain may be valuable. In 1914 there was an actual surplus of veterinarians in Great Britain, and the number of students in the British veterinary colleges was decreasing, because other professions offered young men more attractive and lucrative positions than did the veterinary profession, which was obviously becoming somewhat crowded, due no doubt to the increasing use of the automobile and motor truck.

Almost from the beginning, the British army drew on the colonies for veterinarians, and Canada in particular, furnished far more than her quota. That is, a majority of the Canadian veterinarians were taken into the British army veterinary corps and were not used with Canadian troops. In addition to this, American veterinarians were used largely for transport work. Notwithstanding these additions to the veterinary corps, for which the United States has no similar source on which to draw, Great Britain ran short of veterinary officers, and a year ago publicly asked for American veterinarians and received many.

So many veterinarians have been taken out of Great Britain that it has been found necessary to apportion the territory among those that are left, with the utmost care, in order that portions of the civilian population be not left without veterinary service.

When the United States entered the war, there was perhaps a small surplus of veterinarians in this country, and the schools were graduating veterinarians somewhat in excess of the number necessary to make up the annual loss to the profession through death and retirement.

Now the army has withdrawn seventeen hundred veterinarians from civil life, and it is expected that thirteen hundred more, or a total of three thousand, will be taken by the spring of 1919. This number is predicated upon a basis of an army of 5,000,000, the number that the War Department's plan contemplates having under arms by spring, and few believe that will be the end. The President has said: "Why limit the army to 5,000,000," and the presumption is, if it be necessary, as the indications are that it will be, that the military forces will be increased far beyond this number, with a proportionate increase in the requirements of the veterinary corps. For the present, suppose 3,000 be taken as the number of veterinary officers required by the army. Careful observation over a considerable portion of the country has shown that there exists now a scarcity of veterinarians for the civil population. This is further evidenced by the shortage of veterinarians in the B. A. I., which is said to lack about 175 of having the number of veterinarians desired for its varied activities and as a result may have to turn back into the

treasury a large part of its appropriation for the control and eradication of tuberculosis.

The thirteen hundred additional veterinarians may be spared from civil life, however, without any genuine hardship to any locality if the veterinary service available for the civilian population be reasonably well distributed, which it is not at present. But, what of the natural depletion of the ranks of civilian veterinarians by death and retirement, approximating 5 per cent yearly? In 1918 approximately one thousand veterinarians were graduated by the veterinary colleges of America. In 1919 the graduates will hardly total twenty-five per cent of this number and the number may fall as low as two hundred. This will nowhere near make up the loss to the profession through death and retirement, and continued for a few years, even with no further draft by the military, will bring about an alarming shortage of veterinarians for the animal industry of the country, and this at a time when governmental and other agencies are doing everything possible to increase the animal population.

The solution of this problem lies with the schools, since it is only from the schools that additions to the profession may come, and conditions with the schools are far from satisfactory at this time. Three of the private veterinary colleges have already announced their discontinuance, three have announced that they will continue, some or all of the others may continue for the present year, and perhaps for another, but regardless of announcements or intentions, the private schools can continue only if they attract students sufficient to pay the expense of running, for not more than one or two of these schools are in a position to continue if the amount paid for tuition should fail to equal the necessary running expenses. The country appears to be in a condition where it needs the help of the remaining private veterinary schools and needs it badly, and every encouragement should be given these schools to continue. This does not mean that concessions in the matter of entrance requirements, faculty requirements, or instruction should be made, because the war has shown, as nothing else could have shown, the necessity for properly qualified veterinarians. Great as the harm that may come from insufficient veterinary service is, we should prefer it to an increment of men not properly qualified; and no veterinary school should be permitted, because of the emergency that has grown out of the war, to continue on a plane that would result in additions to the profession for whom we must be ever apologizing. In the opinion of the writer, three years more of war will bring the country face to face with an acute shortage in veterinary service, for the civilian population. At such a time when each veterinarian must perforce do the work of two, the best is hardly good enough, and there must be no let down in the requirements exacted of the schools, state or private.

# Army Veterinary Corps Miscellany

THE development of greatest interest during the month in matters pertaining to the army veterinary corps was the resumption August 1st, of examination of civilian veterinarians for commissions in the veterinary officers' reserve corps.

The examination of civilian veterinarians was discontinued on August 27, 1917, because the supply of veterinary officers in the officers' reserve corps at that time was ample for the needs of the army. Altogether, about seventeen hundred veterinarians were commissioned, nearly all of whom are now in active service. It is expected that commissions in the officers' reserve corps will be issued to at least thirteen hundred more, bringing the number of veterinary officers up to the authorized quota of three thousand.

Examinations for commission in the veterinary section of the officers' reserve corps are open to veterinarians in civil

life. All appointments will be in the grade of second lieutenant and future promotions based entirely on the qualifications of the officer.

The officers of the veterinary reserve corps are appointed and commissioned by the President after having been found upon examination prescribed by him, physically, mentally, and morally qualified to hold such commissions. Commissions are issued for periods of five years, at the end of which time the officers may be recommissioned subject to such further examinations and qualifications as the President may prescribe. They are subject to call for duty in time of actual or threatened hostilities only. While on active duty under such call they are entitled to the pay and allowances (including quarters, fuel, and light), of their grade. They are entitled also to pension for disability incurred in the line of duty and while in active service. They are not entitled to pay or allowances except when in active service, nor to retirement or retired pay.

Appointees must be citizens of the United States, between 22 and 55 years of age, must be graduates of recognized veterinary colleges or universities, and must at the time of appointment, be in the active practice of their profession in the states in which they reside.

The examination is physical and professional. It is conducted by boards consisting in each case of one medical and two veterinary officers of the army, designated by the War Department.

The examination as to physical qualifications conforms to the standard required of recruits for the United States Army. Defects of vision resulting from errors of refraction which are not excessive, and which may be entirely corrected by glasses, do not disqualify unless they are due to or are accompanied by organic disease. Minor physical deficiencies may be waived.

The professional examination may be oral. If the applicant fails therein he may, if he desires, have a written examination. An average of 75 per cent is required to qualify in the examination. The examination comprises the following subjects:

1. General anatomy.
2. General pathology, therapeutics and surgery.
3. General bacteriology and parasitology.
4. Hygiene, including feeding and watering, stabling, heat and light, and ventilation.

Applications for appointment in the veterinary reserve corps must be made in writing, upon the prescribed blank form, to the Surgeon General of the Army, Washington, D. C., who will supply the blank upon request. This blank may also be obtained from the examining board. The correctness of the statements made in the application must be sworn to by the applicant before a notary public or other official authorized by law to administer oaths. It must be accompanied by testimonials based upon personal acquaintance, from at least two reputable persons, as to the applicant's citizenship, character, and habits, and by his personal history given in full upon the blank form furnished him for the purpose.

A veterinary examining board has been appointed at the following places:

ALABAMA: Anniston, The Camp Veterinarian, Camp McClellan.

ARKANSAS: Little Rock, The Camp Veterinarian, Camp Pike.

CALIFORNIA: Linda Vista, The Veterinarian Auxiliary Remount Depot, Camp Kearny, San Francisco, The Veterinarian, The Presidio.

DISTRICT OF COLUMBIA: Major Joseph N. Hornbaker, V. C. N. A., S. G. O., Unit F, 7th and B Sts., N. W.

FLORIDA: Jacksonville, The Veterinarian, Auxiliary Remount Depot, Camp Joseph E. Johnston.

GEORGIA: Atlanta, The Veterinarian, Auxiliary Remount Depot, Camp Gordon. Chickamauga Park, The Senior Veterinary Instructor, Medical Officers' Training Camp, Camp Greenleaf.

ILLINOIS: Chicago, Major Geo. A. Lytle, V. C., N. A., 3615 Iron St.

IOWA: Des Moines, The Veterinarian, Auxiliary Remount Depot, Camp Dodge.

KANSAS: Fort Leavenworth, The Post Veterinarian. Fort Riley, The Senior Veterinary Instructor, Mounted Service School.

KENTUCKY: Louisville, The Camp Veterinarian, Camp Zachary Taylor.

LOUISIANA: Alexandria, The Veterinarian, Auxiliary Remount Depot, Camp Beauregard.

MASSACHUSETTS: Ayer, The Veterinarian, Auxiliary Remount Depot, Camp Devens.

MICHIGAN: Battle Creek, The Veterinarian, Auxiliary Remount Depot, Camp Custer.

MINNESOTA: Fort Snelling, The Post Veterinarian.

MISSOURI: St. Louis, Major C. W. Greenlee, V. C., N. A., Medical Supply Depot.

MONTANA: Fort Keogh, The Purchasing Zone Veterinarian.

NEW MEXICO: Deming, The Veterinarian, Auxiliary Remount Depot, Camp Cody.

NEW YORK: Fort Jay, The Veterinarian.

OHIO: Chillicothe, The Veterinarian, Auxiliary Remount Depot, Camp Sherman.

OKLAHOMA: Fort Sill, The Veterinarian.

PENNSYLVANIA: Philadelphia, Major Samuel H. Gilliland, V. C., N. A., Veterinary Laboratory, 39th and Woodland Ave.

SOUTH CAROLINA: Columbia, The Veterinarian, Auxiliary Remount Depot, Camp Jackson.

TEXAS: Fort Worth, The Veterinarian, Auxiliary Remount Depot, Camp Bowie. Houston, The Veterinarian, Auxiliary Remount Depot, Camp Logan. Fort Sam Houston, The Veterinarian, Auxiliary Remount Depot, Camp Travis.

VIRGINIA: Newport News, The Supervising Veterinarian, Port of Embarkation. Petersburg, The Senior Veterinary Instructor, Veterinary Training School, Camp Lee.

WASHINGTON: American Lake, The Veterinarian, Auxiliary Remount Depot, Camp Lewis.

WYOMING: Fort D. A. Russell, The Veterinarian.

The applicant should proceed to the most accessible point in the foregoing list and report to the board. He will be required to defray all travel or other expenses incurred in going to the point of examination, while there, and in returning to his home.

The applicant should take with him to be submitted to the board (*a*) the application blank, completely filled out and sworn to before a notary public, (*b*) testimonials based upon personal acquaintance from at least two reputable persons, and (*c*) certificate from the proper official that the applicant is duly registered to practice veterinary medicine in the state in which he resides. The application (*a*) can be filled out after arrival at the place of examination, but time will be saved if it is prepared at home beforehand.

Successful applicants who are commissioned in the veterinary reserve corps are placed on a waiting list and called to active duty as their services may be required. No assurance can be given any person as to when he may be called, but the present chances for active duty at an early date are good. Officers receiving commissions should, therefore, continue their civil occupations until such time as they receive instructions from the War Department.

## Chief Veterinarian Appointed for the A. E. F.

The news from the veterinary corps in France is most encouraging. Major William P. Hill has been made chief veterinarian of the A. E. F., and the veterinary service of the A. E. F. has great prospects of becoming a well organized branch of service with full administrative power. A considerable number of new veterinary hospitals are being constructed. These hospitals have a capacity of one thousand animals each.

Major Hill has been many years in the army and has been in France three years, having been appointed official veterinary observer for the War Department early in the war, and two years before the United States entered the conflict. His unequaled opportunities for observing the work of the veterinary corps of the British and French armies will be invaluable to him at this time.

Mange continues to be the most serious problem with which the veterinary crops of the A. E. F. has to contend. Treatment is by dipping, hand applications and sulphur gas. Although the sulphur gas chamber is not considered the success by our veterinarians that it is by the French, sulphur gas chambers are being put in at all our remount depots and veterinary hospitals. The greatest drawback to the sulphur gas treatment is that only about one hundred horses per day can be treated by this method whereas the dipping vat has a capacity of about ten times this number. Hand applications are of course slow. All three methods of treatment are effective.

The veterinary corps of the A. E. F.

is making every possible effort to get the upper hand, and, so far as possible, to eradicate mange at this season, and thus avoid a repetition of the disastrous prevalence of this malady that occurred last winter. Not only is mange worse in the winter, when the animals' coats are long and when blanketing and close housing are more practiced, than in summer, but the difficulties of treatment are greatly augmented by cold weather.

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## RECENT APPOINTMENTS, ASSIGNMENTS AND PROMOTIONS

Cotton, Major C. E., to Washington after a course of instruction at Camp Lee.

Butler, Captain F. E., promoted to be a major.

Derrick, Capt. J. D., promoted to be a major.

Fish, Major P. A., to Washington.

Ratigan, Capt. W. J., to Veterinary Hospital No. 9, Camp Lee.

Sproule, Capt. W. A., to Camp Greenleaf for inst.

Ackerman, Major E. B., to Camp Greene.

Byerrum, Capt. R. C., to Camp Greenleaf for course of instructions.

Following promoted to be captains: 1st Lts. Black, W. G.; Cook, W. B.; Copper, P. G.; Bourland, C. C.; Kincaid, A. R.; Selby, O. C.; Gould, H. A.; Kunnecke, 1st Lt. R. P.; Summerville, 1s Lt. J. A., and Jensen, 1st Lt. W. B.

Black, 2nd Lt. E. E., promoted to be a 1st lieutenant.

Cramer, Capt. E. J., to Ft. Keogh Remount Depot.

Eshleman, Capt. J. M.; Devine, 1st Lt. J. P.; Smith, 1st Lt. L. E., and Torgenson, 1st Lt. H. E., to Camp Lee.

Crosby, Capt. J. F., to Camp Dodge.

Following 1st lieutentants promoted to be captains: Maguire, F. H., Wallingford, P. F., Jones, E. C., McCullah, H. V., Coburn, E. P.

Stull, Capt. C. M., N. A., to Camp Bowie as camp veterinarian.

Petry, 1st Lt. C. P., to Camp Z. Taylor.

Chase, 1st Lt. C. S., to Camp Cody.

Hoyt, 1st Lt. D. M., to Camp Shelby.

Guffey, 1st Lt. J. H., to Camp Lee Training School.

Gould, 1st Lt. H. A., to Camp Grant as veterinary.

Harsh, 1st Lt. F. P., to Camp Wheeler.

Following to Chicago as meat inspectors: 1st Lts. Boxmeyer, R. E.; Dildine, S. C.; Jansen, J. F.; Siereveld, M., Jr.

To Camp Johnston, Gray, 1st Lt. J. W.

Saul, 1st Lt. S. H., honorably discharged.

Crawford, 1st Lt. N. N., to Camp MacArthur.

Kincaid, 1st Lt. A. R., to Camp Beauregard.

Cook, 1st Lt. W. B., to Camp Sevier.

McCullah, 1st Lt. H. V., to Camp Fremont.

Jones, 1st Lt. E. C., to Camp Kearny.

NO. 3 SECTION CANADIAN VETERINARY CORPS, CANADIAN EXPEDITIONARY FORCE.

Officers from left to right: Lieut. E. Strathy, Acting Adjutant; Lieut.-Colonel M. A. Piché, Principal Veterinary Officer; Captain Charles Evans, Commanding No. 3 Section; Lieut. J. J. McCarrey, C. A. V. C.

Leibhold, 1st Lt. A. A., to base hospital No. 6, A. E. F., France.

Loy, Lt. M. D., from Ft. Sill, Okla., to Camp Wheeler, Ga.

To Camp Greenleaf, Ft. Oglethorpe, Ga.: Drs. Arnold Peter; H. L. Brawner; H. H. Olmstead; P. F. Stoeckinger; F. O. Brostrum; R. C. Ouderkirk; D. J. Kummer; W. E. Simonson; C. B. Wilson; H. J. Hoffeins; E. P. Snortum; R. W. Fuller; R. W. Bernhardt; Frank Wilson; Jay Wilson; Walter Fleenor; George Estey; G. E. Clark; R. G. Montgomery; George Wessels; E. B. Householder; W. Robertson; T. M. Rossing; L. R. Potter; H. Gross.

To Camp McLellan, Chattanooga, Tenn.: J. H. Nalley; 2nd Lt. R. J. Flynn.

To Fort Sill, Okla.: S. G. Lindsay.

Lockhart 2nd Lt. Ashe, to Camp Bevan.

To Camp Cody, Deming, New Mexico: Lt. W. W. Utzman.

To Camp Lee, Petersburg, Va.: 2nd Lt. R. W. Myers; P. L. Ellis; George T. Smith.

To Camp Lewis, Washington: S. A. Freeman.

Among those recently called to service: Cecil Merriman; W. C. Graham; Julian Howard; A. E. Harding; W. G. Graham; G. S. Failing; S. W. Clark; S. S. Doherty; F. D. Market; J. W. Richardson.

# The Training of the Clinician

By E. WALLIS HOARE, F. R., C. V. S., London, England
Editor of the Veterinary Review

IN every part of the world at the present time there is a demand for the services of the veterinary clinician. In spite of the warnings of the pessimists that the days of equine practice were numbered, owing to the advent of the motor, practitioners are still able to obtain a considerable part of their income from the treatment of equine maladies. We have every respect for the pathologist, the veterinary officer of health, and those veterinarians who devote their lives to municipal work, but amidst the enthusiasm that is centered in the departments mentioned, there is a tendency to overlook matters connected with clinical teachings and clinical work.

There are certain matters associated with the "making of the clinician" which we propose to discuss briefly:

1. The teacher who has not himself been a practitioner lacks important essentials, and is under the impression that lectures can be relied upon to teach students the diagnosis and treatment of disease. The man who has never been "through the mill" has no idea of the requirements of the clinician, his knowledge is derived from the study of books and from an acquaintance with the clinical material furnished by a college. It seems hardly necessary to point out the difference between the practice afforded by a college and the varied type of work that falls to the lot of a general practitioner. In the former instance the cases presented are of a more or less stereotyped character and the conditions are ideal for both medical and surgical work. In private practice a variety of cases are encountered, the conditions are seldom favorable, and, the owners of the animals have to be studied as well as the patients.

The teacher who prior to engaging in pedagogic work has practiced for a period of about ten years has accumulated a vast fund of valuable knowledge; he has made the usual number of mistakes and learned much therefrom; he is aware of the various pitfalls which exist along the rough road to success, and is familiar with methods of dealing with awkward situations. If evidence is called for to support this contention we have only to point to the careers of the most noted of our veterinary teachers of the past. In the early days it was the skilled clinicians, the men who had observed and studied disease in the stable and cow shed, who revolutionized the teaching of veterinary science. Dick, Williams, Wolley, and Robertson will ever be remembered as men who were accomplished clinicians who had acquired their skill in the school of actual practice. The old axiom that "you must learn before you can teach" is especially applicable to the man who undertakes to teach veterinary medicine and surgery.

2. Lectures, in the absence of clinical material, are of comparatively lit-

tle value. The student must be taught in the hospital with the cases before him. If the college cannot provide suitable cases, practitioners should be appointed as extern teachers. There is a tendency to imagine that a course of lectures on veterinary medicine will enable the student to diagnose and treat disease. It is time that such a fallacy was exploded.

Let us inquire how the mature practitioner renders himself familiar with a new disease. Is it by confining his study of it to lectures or to reading textbooks? Certainly not. He seeks for cases of the malady and studies the symptoms by observing them, and he also makes postmortem examinations. These observations he compares with descriptions of the disease and articles on the subject. Let us not ignore the fact that to the average student, the majority of diseases are unfamiliar. Hence, he must study them clinically. Typical and atypical cases must be observed. Eyes, ears, and hands must be trained. The pitfalls in diagnosis must be pointed out and the mistakes made by the teacher should be confessed, as they serve as admirable object lessons.

In too many instances, teachers are regarded as being incapable of making mistakes, and the cloak of infallibility is responsible for preventing many valuable lessons in erroneous diagnoses from being illustrated. We learn more from failures than from successes, and it is of importance to impress upon the student that even the very elect are not immune to errors.

The clinical lecture gives many opportunities for pointing out the apparently small, but, in reality, very important points in diagnosis and treatment. The art and science of physical diagnosis can be taught only in the hospital. Is it not grotesque to compel the student to listen to a sterotyped course of lectures in the lecture room, when we know that such a method can never make him an average clinician? The clinical teacher must be an adept at his work; the ordinary lecturer is in too many instances an automaton who simply fills his head from textbooks and disgorges it in the lecture room.

In human medicine the value and necessity for clinical teaching are fully recognized and who will have the temerity to deny that in veterinary medicine it is of far greater importance?

The facility with which newly qualified men can obtain posts as teachers is extraordinary. One would imagine that the only qualifications necessary were a brilliant college career and influence. Perhaps in the future it will be recognized that a varied experience in practice is a *sine qua non* for a teacher of veterinary medicine and surgery. A little more of the stable and cow shed could with benefit be introduced into the college curriculum without injuring the dignity of the laboratories. For, say what we will, we must admit that in veterinary practice the "bacteriological tail has not yet suceeded in wagging the clinical dog."

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**Podophyllin**

This active principle is official in the U. S. P. and B. P. as Resina podophylli—resin of podophyllum. Its origin is Podophyllum peltatum (*Berberidaceae*). Podophyllin is an amorphous, greenish-yellow powder soluble in alcohol and the caustic alkali solutions but not in water.

*Pharmacology.* This is one of the slow-acting cathartics, it requiring eight to ten hours to produce bowel evacuation. It has a selective action on the duodenum, probably acting as an irritant, although it is supposed by some to be a cholagogue. In common with most cathartics, podophyllin should be combined with other drugs to modify its action; preferably aloin, calomel and atropin.

Podophyllin resembles phenolphthalein in its uncertainty of action; usually most satisfactory, it is at times disappointing.

*Therapeutics.* The only use for podophyllin is as a cathartic. It is more often used in chronic constipation rather than the constipation associated with fever where the quickly acting hypodermic cathartics have a distinct field.

*Administration.* Always by the mouth in pill or powder form, the latter in capsule.—F. B. KIRBY.

# Department of Live Stock Poisoning

By L. H. PAMMEL, Ph. D., Ames, Iowa
Professor of Botany, Iowa State College

## Poisoning by Rhubarb

MOST persons will not believe that rhubarb can, under some conditions, produce poisoning. Such a case was mentioned in my "Manual of Poisonous Plants." The London *Lancet*[1] discusses the following interesting case:

"At the resumed inquiry held by the Enfield coroner on Tuesday last into the death of a local minister, Dr. B. H. Spilsbury, who made the necropsy, attributed the fatal issue to oxalic-acid poisoning, the oxalic acid having been taken in the form of cooked rhubarb leaves. Mr. J. Webster, assistant analyst to the home office, stated that he had found oxalic acid in certain organs of the body and no traces of any other poisoning. Analysis of rhubarb leaves from the same ground as those eaten by the deceased showed the presence of calcium and potassium oxalates in quantities of about ten grains of each to the pound. Dr. Spilsbury characterized this quantity as a borderline amount sufficient to cause serious symptoms in certain people. The smallest recorded fatal dose of oxalic acid is given in textbooks as 60 grains, and the soluble acid potassium salt is said to be equally poisonous. Taken in concentrated form both act as violent irritants and quickly excite vomiting, by which some at least of the poison is expelled. Well diluted or taken with other food, gastric irritation may be absent and nervous symptoms dominate the case, due to alteration of calcium content of the blood. Combined with calcium, oxalic acid is entirely inert. The coroner uttered a warning against the use of soda in cooking rhubarb stalks—an addition which has been recommended to neutralize the acidity and avoid the necessity of adding sugar—inasmuch as a soluble oxalate may be produced by its action. He might well have given the positive injunction to add a pinch of powdered chalk in the cooking, whereby the same end is attained with perfect safety."

I recently received a letter from Miss Clara Elliott of Stuart, Iowa, inquiring whether or not rhubarb was poisonous. She states that in the works consulted by her the plant is said to contain citric and malic acid. She enclosed a clipping from the Des Moines *Capital*, April 3, 1918, in which Dr. John Harvey Kellogg of Battle Creek, Michigan, states:

"Rhubarb contains oxalic acid, which is a poison and not a food. In this respect oxalic acid differs from food acids. Citric acid, malic acid, and tartaric acid are the only organic acids which can be utilized by the body as foods. These are burned in the body, like starch, sugar, and other foodstuffs, but oxalic acid and acetic acid are poisonous. They undergo no change in the body, and interfere not only with the digestion, but with other vital processes."

It seems to me that the general statement of Dr. Kellogg should be somewhat qualified.

Rhubarb can be safely used, provided it is not used raw, and not in too large amounts. The oxalic acid is a poison. All plants in the process of metabolism produce oxalic acid which occurs in the plant as oxalates, generally as calcium oxalate, an inert substance, in the rhubarb as potassium hydrogen oxalate. Heating would destroy the potassium oxalate forming formic acid and finally forming $CO_2$ and water, so Profes-

[1]Lancet, London, Vol. 192, 847, June 2, 1917.

sor Gaessler, of the Agricultural Chemistry Department of the Iowa State College, tells me. The trouble with the statment of Dr. Kellogg is that it is not accurate. Free oxalic acid is just as injurious to the plant as to the animal. The plant could not live long with the free acid. I would, therefore, say that rhubarb can be safely used if thoroughly cooked and as suggested by the writer in the London *Lancet*, adding a pinch of chalk.

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### Wet Clover Pasture and Loss of Hairs

Dr. J. A. Brill, of Dow City, Iowa, sends the following interesting communication concerning a disease of horses when turned out in a clover pasture:

I have been having considerable trouble with horses turned out in white clover pasture. The nose swells up, especially the part which touches the grass in grazing, also the ankles. Later the hair drops off of these places, and the skin takes the same appearance as if it were burned with caustic. I believe white clover causes the trouble, especially when there is dew on the clover. I wish you could give me a little information on the subject.

I do not think white clover is responsible for this trouble. It is true that some plants, like the spurges may, at times, cause a loss of hair. These plants are common in Iowa, but at this time of the year are rather small. White clover produces profuse salivation at times. Otherwise, I know of no serious trouble from the feeding of white clover. I submitted the letter to Dr. Charles Murray, who replies as follows:

I have read Dr. Brill's letter regarding the condition he is having in horses and, like you, I can see no connection between this condition and white clover. So far as I know, aside from causing profuse salivation, white clover is not irritating enough to produce the changes that he records as being present in these animals. I am wondering if it is possible that the condition Dr. Brill describes might not be the ringworm which is reported by Hutyra and Marek as being common in the horse, readily spreading when the skin becomes macerated by getting wet in pastures, or otherwise. If the condition is not ringworm, I am inclined to think that it is some form of skin disease which is merely favored by the exposure the animals are having to the wet pastures and not due to any species of plant with which they are coming in contact.

### Young Cockleburs Poisonous

Recently I received a communication from J. Wells, Jr., of Presho, South Dakota, stating that cockleburs in the cotyledonary stage, the two-leaf stage, are poisonous. Little has been written on the subject recently. The experience cited by Mr. Wells seems to be similar to that of others. I have just come across a note by Dr. N. S. Mayo, of Chicago, well known among veterinarians. He says:

The writer has been particularly interested for many years in the subject of the poisoning of live stock by various plants obtained in pastures. The losses of live stock from this cause in the United States are considerable, particularly upon the ranges of the Western States.

The spring season is unusually dangerous, as animals crave green food and will eat plants that they would not touch under normal pasture conditions. Some plants appear to be poisonous only at certain stages of their growth, while at other periods of growth they are inert or so distasteful that animals will not eat them. The cocklebur (*Xanthium Canadense*) causes the death of stock only when it is sprouting and reaches the two-leaved stage.

The physical condition of the animals also seems to be an important factor. If they are thin in flesh and the digestive tract is empty, the toxic effects of plants eaten is pronouncedly marked.

The most valuable remedy, by far, of any is permanganate of potash. This chemical was especially recommended by Chesnut and Wilcox in their pioneer work on the stock-poisoning plants of Montana, and though more recent investigations indicate that it is not so effective as they then supposed, it is nevertheless a very valuable remedy, especially in cases where other and more specific antidotes are unknown.

Permanganate of potash, through its strong oxidizing action, attacks and breaks down most of the plant poisons. This oxidizing action is accelerated when the substance to be treated is acid in reaction. The contents of the stomachs of animals are very often only slightly acid, or, in some cases, may be even alkaline. Because of this fact it has been found advantageous to administer with the permanganate some other chemical which will increase the acidity. Sulphate of aluminum is used for this purpose, since it is easily administered and is not so dangerous as the acids themselves. Permanganate of potash and sulphate of aluminum are quite inexpensive and are carried by all druggists.

In practice, it has been found that best results are obtained when equal amounts of the two chemicals are used.

# POINTED OPINIONS ON LIVE TOPICS by Readers of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the lasting gratitude of those who are aided by your suggestions.

## Knowledge of Poultry Diseases Essential

IN THE summer of 1892 I spent my first year with my preceptor, Dr. T. B Howard, Nevada, Mo., a graduate of the Chicago Veterinary College. At that time veterinary practice was confined almost entirely to the horse. In fact, Dr. Howard often told me that he knew nothing about diseases of any animals other than the horse. He said that at the college they dissected no animals except the horse, and that pathology and bacteriology were scarcely mentioned.

A short time after that considerable attention began to be given to diseases of the dog, and in large cities canine and feline specialists conducted lucrative small-animal practices, the dissection and physiology of the dog receiving due attention.

The placing of the inspection of meats under veterinary supervision by the federal government, by the act of March, 1891, and later, having this work actually done by veterinarians gave a great impetus and served to broaden the field of the veterinarian. About this time quarantine work began to be developed and systematic methods instituted for stamping out contagious pleuro-pneumonia, foot-and-mouth disease, sheep and cattle scab, and later the work of eradicating tuberculosis and hog cholera became a notable feature of the veterinarian's field.

A study of the world's progress for the past quarter of a century shows that of the sciences, veterinary medicine has been among those most affected. The wonderful progress made has been along broad lines, and at the present time the thoroughly trained veterinarian is well informed on all diseases of animals, including the domestic fowl. At least, the confession that he knew nothing of diseases of fowls would be tantamount to admitting that he was not well rounded out in his training, for which there is no excuse when we have a complete "Anatomy of the Domestic Fowl," and a comprehensive book on diseases of the fowl, both having developed with the other departments of veterinary science.

While the coming of the motor vehicles and the tractors naturally decreased the number of horses needed for the road and the field, there is still room for the horse. The development throughout the world has been so rapid and the world war conditions brought about by the war during the past few years have made the raising of horses profitable, though there is likely to come a time when he will come near "seeing his day," since the coach horse,

the riding horse, and the dray horse of the city are passing.

To offset the deficiency in equine practice there will always be a profitable field in small animal practice, as the pets are here to stay. Likewise the better breeding of cattle, hogs, and sheep has opened up new fields of endeavor, and all up-to-date veterinary colleges include in the dissecting room the cow, dog, horse, and fowl. and many also include the sheep and cat. This study is also continued in the physiology class along broad lines and also in the class in theory and practice and in therapeutics. Pure milk production, as well as many other phases of public health, can best be carried on under the supervision of the veterinarian. Sanitary science will always need veterinarians to carry out its work, and the same may be said of the practice among food-producing animals.

To get to my point, in the better breeding of animals, in no one line is more effort being expended than in the breeding of fowls. Many birds are sold each year for several hundred dollars a piece, and thousands of birds are sold for $50.00 to $100.00 each. Money or the risk of money makes demands for protection. We protect the money invested in a house by hiring an insurance company to take the risk. This holds true of live stock, and we carry insurance on our own lives to protect those dependent upon us, and the same is true of a valuable flock of birds. The man with thousands of dollars worth of birds in his yard will be only too glad to employ a competent person to treat or give scientific advice, and pay him a reasonable fee for such service. It is protection. To gain the confidence of the poultryman, it is necessary that the veterinarian become as proficient in the diseases of the domestic fowl as he is in diseases of the other farm animals. When he does this he will have the full esteem of the poultryman; he will be employed and can make his services indispensable.

B. F. KAUPP, *Pathologist,*
*No. Car. Exp. Sta.*
W. Raleigh, N. C.

## MULES THAT BREED ARE NOT MULES

In concluding a recent article (*Am. Jour. Vet. Med.,* June, 1917) dealing with the formation of germ cells and the sterility and fertility of mules, the writer made the following statement, "——— We are forced to agree, if the above cases are to be accepted, that the production of offspring by the common mule, is indeed a reality." At least two cases of mules producing offspring are being accepted as scientific facts, and the splendid cytological observations of Wodsedalek (*Biol. Bull.,* Jan., 1916) are being modified to meet these remarkable exceptions. One case is that of a mule owned by D. W. Sullivan, Weed, California, which gave birth to a horse colt in 1915. The other animal which has produced three foals, is owned by J. M. Bryant, Quincy, Indiana. Records of these cases may be found in the *American Journal of Veterinary Medicine,* Nov., 1915, and June, 1917, *American Farming,* Feb., 1916, and in the *Journal of Heredity,* Nov., 1916.

The illustrated article, "Mules that Breed" by Owen Lloyd-Jones in the last mentioned journal is, seemingly, quite convincing. It will be noted, however, that the statements of the owners are recorded as facts, specific proof being obviously lacking.

About a year ago the writer began an investigation of these cases. A very extensive questionnaire was sent to the owners of the above-mentioned animals but no response was received, although both parties had been very prompt in answering general communications. Three requests (Apr. 10, May 11, and June 5) were made to the California owner for a response to the specific questions, but to no avail, indicating that the owner did not feel safe in giving detailed information.

A visit to Quincy, Indiana, revealed some interesting facts regarding the reproducing mule owned by J. M. Bryant. In the first place the owner expressed great disappointment when I appeared at his farm without announcing my visit, as he stated that he would like to have had time to "trim the mule up

a little." In fact, the first glance at the animal suggested that considerable "trimming" would be necessary before it would resemble the "mule" pictured in various journals and exhibited at the county fairs.

When it was definitely established that the animal under consideration had produced offspring, her parentage was investigated. Lloyd-Jones states that, "Some have doubted her breeding until they heard her voice, which resembles more the neigh of a horse." If the voice does resemble that of the horse, which the writer questions, this fact certainly would not establish the parentage. Mr. Bryant claims that this animal is from a "black Spanish jennet by a dark chestnut half-blood Percheron stallion." It developed, however, that this was only a supposed accidental mating. Mr. Bryant states that the jennet (mother of the animal considered) was bred to a jack owned by G. Cradick, Gasport, Indiana, almost fourteen months before the animal under consideration was born (July 20, 1904). The owner claims that it is impossible for a jennet to carry a colt that length of time, hence the father must have been a three-year-old pony which was in the pasture with the jennet after she was supposed to have been with foal. However, neither the owner nor the farm hand who attended the horses could remember of ever seeing the pony cover the jennet, although the owner seems to have stated to Lloyd-Jones that, "About nine years ago he bred a dark chestnut half-blood Percheron stallion to a black Spanish jennet" and obtained the above considered animal.

If we assume that the above report is correct and that the jennet was mated to the jack about fourteen months before a colt was born, the question then arises as to the possibility of a jennet "carrying a colt" two months longer than the normal period of gestation, since this is the basis of Mr. Bryant's assumption that the stallion is the father of the above considered animal.

In view of the investigations on deferred fertilization, this case would not be surprising. Sumner (*Biol. Bull.*, April, 1916), while breeding certain mice, found that in some cases the period from the last copulation to the date of birth was more than twice the normal period of gestation (22 days). In his record case No. 5 the last opportunity for copulation was May 17 and the birth of the litter did not occur until July 3—more than twice the period of gestation. In face of such facts, we do not seem justified in concluding that it would be impossible for a jennet to give birth to a colt almost fourteen months after copulation.

Despite the claims of the owner to the contrary, Mr. Cradick states in writing that "Mr. Bryant never bred any jennet to the jack until July 20, 1906". If we are to accept the breeding records of Mr. Cradick, the date of birth was July, 1907—three years later than Mr. Bryant reported to the writer. However, according to the information given to Lloyd-Jones, the animal was about nine years old in 1916. By counting back it will be noted that the date of birth, according to this statement, was in 1907. Since Mr. Bryant associates July 20 with the birth, indications are that the exact date was July 20, 1907. The period of gestation would therefore be from July 20, 1906 (according to Cradick) to July 20, 1907—exactly twelve months. According to this analysis of the conflicting statements, the animal which has attracted so much attention is a normal jennet—the father being the Gasport jack and the mother the Quincy jennet. The twins pictured by Lloyd-Jones and others would, therefore, be common jennet colts. The fact that the period of gestation of this mother is twelve months (July 7, 1914, to July 11, 1915, in the case of the above twins) further suggests that she is a normal jennet, as eleven months is the normal period for the horse.

In case of either statement of the owner to Lloyd-Jones or to the writer regarding the age of the animal, it seems quite conclusive that the Indiana case of a "Mule That Breeds" is not a hinny mule but a common jennet and thus should be canceled from the breeding and scientific records. The same should

be concluded of the California and other cases until substantial proof is presented. The principal object of many of these non-authentic reports is to deceive the people and thus to collect an admission fee at the county fairs. It is known that the Indiana animals have been in the "side shows". The owner also makes the following suggestion in response to a letter asking for a picture of his animals for scientific purposes. "You can sell quite a lot of the pictures at your own price and after you get your expenses, *we can split* on the income." Is it not surprising that scientific workers will accept statements of men who are interested only in ten-cent admissions and profit on pictures, as facts without making a thorough investigation. If this is our attitude, we should record the following in the annals of science:

One of
THE 7 WONDERS
OF THE WORLD

KATE—The Mule That Gave Birth to a Horse Colt

*No Fake, Pronounced Genuine*
*By Veterinarians and Scientists*

Every Investigation and Test Proves the Genuineness of this
REAL FREAK OF NATURE

*NOW ON EXHIBITION*
At This Fair Ground

Owned by Sam Edwards and Don Burgess of Caruthersville, Mo. Exhibition in charge of Pete Vinters.

It so happened that these animals were on exhibition at Kennett, Mo., where my brother is located. A letter and questionnaire brought the following response which is self-explanatory:

Referring to your letter of the 1st inst., regarding the mare mule and her colt which were on exhibition here during the Kennett fair, I wish to advise that I have looked over the situation quite closely and decided that it was so gross a fake that I would not attempt to get answers to all of the questions suggested. First of all, they could not tell anything about the origin, nor did they know anything about the daddy of the colt. It was a horse colt, had no resemblance to a mule and did not take milk from the mare mule. In fact, the mule had no milk. When asked about this they said that they had been feeding the mother on timothy hay which had dried up her milk. I told them that the reality of the situation was a great thing for them and asked why they did not feed the mother such food as would cause her to continue to give milk. They said there was no doubt about it, and that they did not care if she did not give milk as the colt was old enough to eat. So passes another fake of the rankest kind.

J. N. GOLDSMITH,
Gen. Auditor St. L. K. & S. E. R. R. Co.
WM. M. GOLDMITH,
Colorado State Normal School.
Gunnison, Colo.

## FRACTURE OF LIMBS IN BOVINES

I was recently called to treat a seven-year old cow that had just sustained a fracture of the metatarsus. The animal had been run over by an automobile, and had been skidded over the ground for a distance of about eighteen feet, as was evidenced by the marks left in the road.

It was a simple fracture of the large metatarsus, which was broken completely off, the limb being held to the body only by the soft tissues. The fracture being so close to the hock, I felt it would be difficult to keep a bandage in place, yet since it was a simple fracture I felt that the prognosis would be favorable. The fracture was released in the usual manner and the parts held in position by means of wood splints and bandages.

The leg was covered with a heavy layer of cotton and four wood splints bandaged in position, two being placed laterally, one posteriorly, and the other anteriorly. Around these were placed bandages, over which sodium silicate was poured, making a very rigid cast holding the parts in position very nicely.

These rigid bandages were left in position for five weeks and then removed. The fractured ends of the bone had united and the animal made a complete recovery.

I was called by another client to treat a fracture of the fore limb in a four-month-old calf. It was a simple comminuted fracture of the large metacarpus. The fracture was reduced and the parts held in position with a rigid bandage. No splints were used, merely the sodium silicate and common cotton rolled bandages. These bandages were removed at the end of four weeks, at which time the parts had united. Recovery was complete.

CHAS. W. BOWER, D. V. M.
Hope, Kansas.

## HORSEFLESH IN THE FOOD RATION SCHEME

The inclusion of horseflesh in the list of foods in the ration scheme has given official recognition to this commodity as a recognized article of meat dietary in Great Britain, and there is no doubt that it will speedily become as great a necessity amongst certain classes as it has in the Allied countries. In France, Belgium, and Italy the horse butchers are prosperous men, and their shops compare favorably in cleanliness and general sanitary arrangements with those of the purveyors of beef or mutton. The prices usually fixed by law are considerably less than for beef, and the trade which is done affords ample proof of the popularity of horseflesh as a nourishing article of diet. For example, at the present time in a certain town in Italy the official prices fixed by the town council for beef are as follows: The best joints, 3.50 to 4.40 lire per kilogram, if purchased with the bones, or 5.60 lire without bone; whilst corresponding parts of horseflesh cost 2.40 lire and 3 lire, respectively, there being no difficulty about selling all that can be obtained.

Horseflesh is everywhere considered an excellent and nutritious food, and, except for the sentimental aspect of the question, there is not the slightest reason why it should not be made an issue ration to the army just as much as beef or mutton. Everyone who has tasted it and thousand of others who have eaten it unwittingly, speak well of it, and if nicely cooked and served in the same manner as a good beefsteak it takes more than an ordinary epicure to detect the difference.

To officially recognize horseflesh as an article of meatfood, for issue to the troops would free an enormous number of cattle for meat distribution at home, and would not by any means be unacceptable by the men themselves. Unfortunately, owing to the wastage of the war there must always be horses to kill, and allowing them to be sold to the Allies to supplement their food supply is a short sighted policy which should be remedied. Horseflesh should be utilized to the best advantage, and thus take its proper place with other necessary foodstuffs.—*Veterinary Journal*, London.

## HORSEFLESH CLEANEST MEAT

Replying to the article "Self-Appointed Interpreter of the Work of God," written by Dr. B. E. Baker, Boaz, Ky., page 361 in the July JOURNAL, I am proud to say that, in my opinion, God would be pleased to have all old horses fatted and used for meat to save many poor human beings from starving, because of the conditions brought about by the cruel war. I am proud of the stand which Dean W. Horace Hoskins, of New York State Veterinary College, New York, takes in regard to the eating of horse meat. I would rather see horses slaughtered in a humane way than to see so many old favorites sold to drunkards to be pounded and starved to death. Maybe such treatment would please the gentleman from Kentucky better than to see them sold for meat.

The ten thousand pounds of horse meat sold each week in New York City is keeping many families from starving. What about Kentucky, are they selling any in that state? The tears shed by some men in that state are crocodile tears. They don't know what they are talking about when they talk about sending veterinarians to hell for selling horse meat. But they may find out if they don't mend their ways.

Horse meat is the cleanest meat to be found, compared to pork and tubercular beef. Perhaps my namesake would rather eat tubercular meat than clean, pure horseflesh, the product of the best and cleanest grains and grasses.

In conclusion I am pleased to state that I am one of many who do not know the taste of booze at 77 years.

A. W. BAKER.

Brasher Falls, N. Y.

## COLLECTIONS

The point of greatest importance in connection with the fee levied by the practitioner for services rendered is its collection.

The judgment that has been displayed in levying the fee has considerable bearing upon the successful collection of it. The satisfied customer is always the best payer.

It is quite generally believed that professional men, more especially the members of the medical profession, are poor collectors. In many instances this is too true, but some professional men are exceptionally good collectors, and it is not uncommon to hear it said that "Dr. So and So is a better collector than he is a doctor."

The veterinary practitioner usually has less trouble with his collections than the physician does. People will pay the veterinarian promptly, while they will at times be very lax or indifferent about paying their family physician.

This is due largely to the fact that the veterinarian's service is in many instances a direct profit-producing service for the patron. He therefore endeavors to keep on good terms with his veterinarian, so that the latter will respond promptly when called upon.

With many small merchants it is a case of "out of business" the moment their one trusty steed is incapacitated, while to many farmers the services of the veterinarian are in many instances worth "their weight in gold."

The veterinary practitioner, therefore, if his service is satisfactory and his fee just, seldom finds it very difficult to collect his fee.

Some veterinarians, however, have trouble with their accounts because of poor methods in presenting them for collection. In not a few instances the trouble is due to shyness on the part of the practitioner; he appears afraid to let his clients know that he is in business for the money there is in it, and that he needs this money to pay his own bills with.

It is no disgrace to show quite plainly that you expect to be paid for what you do, and that the more promptly you are paid the more you appreciate it.

One of the best plans for inducing prompt payment is a cash discount plan. I have used this plan for years in various localities, and it works every time. The plan is about as follows:

When you have rendered a service to a client, sometimes before the service is rendered, he wants in most instances to know what the charges will be. This does not mean, however, that he intends to pay immediately.

I endeavor to find out when he intends to pay; when he asks me what his bill is, I answer by asking him, "Do you want to pay it now?"

If he replies in the affirmative I tell him the amount, and explain to him that I add half a dollar to every fee that I must carry on my books.

It does not take very long before the community is pretty well aware of this, and most of them will pay cash, if they can possibly do so. They figure that they cannot earn a half dollar any easier.

While I do not always add the half dollar to a fee that is not paid immediately, my clients know that I am apt to do so, and I do not have many accounts to carry.

Another method that should be employed by every practitioner is that of sending out statements of accounts every thirty days. Some patrons object to this, but I tell them that the only way they can stop the bills from coming is by paying them. I cannot pay my bills unless my customers pay me, and I am not backward in regard to letting them know it.

The clients who are the most agreeable to serve are usually the ones who pay their accounts promptly. The slow-pay patron is usually the kicker; in order to gain more time in the payment of his bill he keeps annoying the practitioner with little kicks and complaints in an attempt to make the doctor believe that the case has not been

quite satisfactorily treated, and that the bill is not quite just therefore.

While the worst move that one can make in collecting is to plague a debtor when he is unable to pay, there is one that is almost as bad, i. e., to let him gain the impression that you are in no hurry for what he owes you.

Whether the practitioner is short of funds or not, he will find it most profitable to have his clients impressed with the fact that he is not unduly fond of having his money carried in other people's pockets.

The country practitioner does not have so many collection troubles as the city practitioner. While some of his clients may be slow in meeting their obligations, only rarely is an account lost.

City practitioners have much to contend with in this regard. Many accounts are never collected, while some it is possible to collect only by demanding payment in advance. This is especially the case in canine and feline practice in any large city. Where the practitioner conducts a canine hospital unscrupulous persons frequently leave the patient as a forfeit which is never redeemed. Usually, in a canine practice, the patient's value is based upon personal sentiments of the client; the forfeit, therefore, is not easy to realize upon.

Some points worth remembering in regard to collections are as follows:

1. Do not expect good pay for poor service.
2. Do not make an unreasonable charge for good service.
3. Do not hesitate to let your patron know that you expect your pay promptly.
4. Offer some inducement for him to pay promptly.
5. Do not crowd a creditor when he is unable to pay.
6. Do not allow accounts to get cold; keep them warm by mailing regular monthly statements.

When the veterinarian becomes thoroughly acquainted in a community he can collect accounts more promptly than would be possible without this acquaintance.

Some people can be flattered into paying promptly, others must be dealt with coldly, while still others cannot be hurried under any circumstances.

Real "dead-beats" are rare; usually, when people pay poorly it is because they are in financial straits. The average man is honest, and takes pride in paying his bills promptly.

Aside from the manner in which the bill is presented, the reasonableness of the charge and the class of service rendered are most important.

When the debtor avoids payment without good cause a settlement can often be made by a personal interview in which the practitioner should make the client declare just why he refuses to pay. In most cases the grievance can be explained away satisfactorily, although it may be necessary in some instances as an evidence of good will to reduce the bill somewhat. This is always a more satisfactory procedure in the end than collection by law.

The aim should always be to retain the patron's friendship. An account that is collected at the expense of the client's good will is usually a lost account in the end.

Aside from ability and tact in the performance of his work the practitioner's biggest asset lies in his popularity and his friendship.

This is especially true in localities where competition is keen, where the loss of one client always means the loss of several others.

Milwaukee, Wis. M. R. STEFFEN.

Remarkable case reported by Dr. W. E. McBain, Minden, Neb., of a mare which gave birth to a colt, at the age of thirty.

## CHINA AS A SOURCE OF FOOD SUPPLY

A recent letter from Lieut. J. R. Shand, U. S. A., from Tientsin, China, contains some interesting comments regarding business conditions there. He states that the depreciation of the American dollar from $2.50 Mex. three years ago to $1.26 at the present time makes it very difficult for the business man.

Dr. Shands was very desirous of joining our troops "over there," but his request has so far not been assented to. Since he left California in the spring of 1907, Lieut. Shands has been doing duty in the quartermaster department continuously, first in the Philippines and later in China, but since he did not receive his commission until April, 1917, according to army regulations the requirements provide for a full tour of duty for three years after acceptance of commission, so he feels he must swallow his disappointment and stay where he is until 1920.

He encloses a copy of the *China Critic* containing an article by J. W. Ross, Canadian Trade Commissioner in China, in which it is shown that while China is a densely populated country, with many millions of inhabitants on the verge of starvation, the possibilities of food production are so great that, at a low estimate, ten times the quantity of foodstuffs might be available, if intensive methods of cultivation were put in practice. Mr. Ross comments on food conditions at considerable length and says: "The rearing of domestic cattle, sheep, swine and poultry is conducted on a considerable scale, and if transportation and other facilities for the promotion of an export trade in animal food products were available, China could very well be drawn upon to a quite extensive degree in meeting the world's present demand for foodstuff."

It is interesting to note that while domestic cattle have been reared in China from phehistoric times, cattle raising for the production of milk has never been practiced. Dairying is not an industry there and neither cheese nor butter are produced. Cattle have been raised for beasts of burden, mostly as plow oxen, for their flesh for food and for their hides, horns and hoofs. In many parts of the country the cattle are small, but sleek and fat. In the Northern provinces, however, they are larger. There seems to be no particular variety, and it is hardly probable that any new strain has been introduced within the memory of man. Many of the animals have a rudimentary hump, similar to the Brahman cattle of India, but much smaller, showing a probable source of ancestry, the gradual disappearance of hump being due to crossing of breeds. Beef is consumed in all parts of the country, but to a much less extent than pork.

Sheep raising is widespread, but aside from those in the far west, there are no extensive flocks. Many are of the broad-tailed variety; are mostly white with black heads and furnish excellent mutton.

Pigs abound everywhere in China. The pork is good in appearance, but as there is no veterinary inspection whatever, and the manner of feeding extremely doubtful, radical changes would be necessary before Chinese pork should be permitted to enter foreign markets.

Poultry is reared in immense quantities throughout the country, and though a vast amount is consumed by the natives, Mr. Ross states that the industry is capable of great expansion, and that large quantities could very easily be produced for export. A British firm established there for a number of years has been actively engaged in shipping Chinese poultry as well as game and fresh eggs to Great Britain.

China's contribution to the foreign demand for animal foodstuffs during the year of 1916 amounted to the not inconsiderable sum of $16,955,418. Large quantities of beans and seeds, peanuts, walnuts, fish and wheat flour were also exported. Owing to the stimulus of the war conditions, the report for 1917 will doubtless show a material increase over these figures. Since these results have come about without any organization whatever upon the part of the Chinese people or government, it is evident that under proper organization and encouragement China might easily become an important factor as a source of the world's food supply.

## AN UNEXPECTED RECOVERY

I was recently called to see a five-year-old gelding that had been manifesting symptoms of colic. The animal was lying down when I arrived, but got up and staggered when I began the examination.

The symptoms were: respiration hurried and labored; a much accelerated, small and wiry pulse; temperature 105 degrees; ears drooping. Peristaltic movement of the intestines was absent, but tympanitis was very marked. About every twenty minutes a regurgitation of gas from the stomach would occur. Perspiration was standing on his body in large drops.

The history showed that while the horse was in pasture the day previous, it had been cornered by another horse and severely kicked, the flanks being especially badly marked.

After passing the trocar and canula, releasing a large amount of gas, I passed the stomach-tube, causing gas to escape through the tube freely, but pumping several gallons into the stomach and syphoning it out did not disgorge the usual amount of sour undigested food that would be expected in a case of this kind. After removing the fecal masses from the rectum, I made a rectal examination, expecting to find impaction, but nothing abnormal could be detected.

I made a diagnosis of paralysis of the large intestines, with enteritis, caused by the kicks received. The prognosis was unfavorable. Returning to the case about three hours later, I found the horse vomiting a sour liquid with the offensive odor so familiar to the practitioner.

I immediately passed the stomach-tube and syphoned off gallon after gallon of the liquid. I then began pumping water into the stomach, one gallon at a time, and with every gallon of water we would siphon off about two gallons of the sour undigested food thoroughly mixed with the water.

My assistant and I continued this for more than three hours, until we had used about sixty gallons of water, the last few gallons of which returned clear. All this gave evidence that the contents of the intestines were engorging the stomach, in other words, backfiring. The animal was naturally relieved to some extent, but manifested considerable pain and distress during the night, but the vomiting ceased.

The following day his temperature was 106.4 degrees; respiration labored; pulse very weak. He refused to eat and kept his nose immersed in a tub of cold water most of the time. There was no movement of the bowels whatever, and his appearance was gaunt, eyes sunk deep in their orbits.

The second day the temperature subsided to 104 degrees, and his general appearance improved wonderfully. The fourth day the bowels moved quite freely; temperature 102 degrees; the natural peristaltic movement of the bowels returned to normal, and his appetite gradually became better. The animal made a nice recovery and is now ready for the market.

C. W. LYNN.

West Point, Ia.

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## TREATMENT OF ANOREXIA

On page 368 of the July JOURNAL appeared an interesting query from J. W. H., Ind., regarding treatment of persistent anorexia in a mare.

I believe that on page 174 of the second volume of Hoare's "System of Veterinary Medicine" will be found the answer to this query.

The cases which have come under my observation were not quite so bad as those described by Hoare, i. e., they did not all die as did those he cites.

Treatment should consist in proper sized doses of strychnine administered hypodermically. Oral medication is useless. While I have encountered this disease frequently, I have seen only one case in a young animal. Examination discloses nothing to indicate sickness, so all one has to rely on is the owner's statement that the patient refuses feed or fails to eat all that is given him. The animal loses flesh and becomes very weak.

I have found it necessary to feed some of these animals with a stomach-tube and pump. A large bucket or tub of fresh water should be set high enough that the animal may wash out his mouth

without lowering his head. He will often be able to drink in this way when it would be impossible for him to swallow from an ordinary drinking trough. Allow soft feed and remove all feed that the animal does not eat.

I have found this treatment very successful, and I believe if J. W. H. will try it he will have less trouble.

CHARLES W. FISCHER.

Danville, Ky.

## RABIES VACCINE

On March 29th I was consulted by a man who had several cases of rabies on his farm, about twenty-seven miles from my office. Several mules had been bitten the night before by a rabid mule.

The history he gave was as follows: About March 3rd, a dog belonging to a tenant on the farm, was seen biting four hogs and two cows. The dog was later killed. There were 14 other hogs and about 150 head of cattle in the pasture, also a few mules. On March 23rd one of the cows which had been bitten showed symptoms of rabies, which later developed into a violent stage, the cow dying on the third day. The second cow began to show rabies symptoms, March 24. It was killed and the head sent to the state laboratory at Austin. One hog died on the 24th, after being sick only a few hours, another died on the 25th, and another on the 28th. As there was no veterinarian near, none was consulted. The owner received a telegram from the state laboratory stating that "negri bodies had been demonstrated."

On going to the barnyard on the morning of March 29th, the owner found that a mule had "gone mad" during the night and bit 12 mules and horses out of 15 in the barnyard. A physician, close by, cauterized the wounds with nitric acid, and advised the owner to get in touch with a veterinarian, resulting in his calling to see me that evening. I advised the use of rabies vaccine, and with the owner's consent I wired for some, but due to an error, after three days' delay, the vaccine had to be ordered from another firm. I used the Lederle vaccine made at Pearl River, N. Y., using the dilution method of Hogyes.

The animals to be treated included three suspected of being bitten; three with slight skin bites on the hips; two with slight bites on tails; two with severe bites on tails; two with bites on necks; three with skin bites on sides and hips. All had skin bites, except the two with severe bites on the tails, which were deep, and those bitten on the neck. All wounds were dressed daily with tincture of iodin and boric acid.

Using the six-dose treatment, Hogyes dilution method, I gave two doses to each animal on the first day, April 5th, with an interval of two hours. Two doses were given on the following day, two hours apart. Each animal was given one dose on the third day, and one dose on the sixth day.

The rabid mule lived thirty-eight hours. The fourth hog died on the 11th of April, the head being taken to my laboratory where I demonstrated negri bodies, using methylene blue and fuchsin stain, first fixing the slides in one-half per cent alcohol solution. I have kept in touch with the owner since, now three months, and none of the animals treated have shown any symptoms of rabies. I feel that in the Hogyes dilution vaccine for rabies we have an excellent treatment that can be used advantageously by veterinarians. It is easily and quickly given and the expense is not great.

HERBERT SHULL.

Texarkana, Ark.-Tex.

## Phytolacca

Popularly known as poke-root, this remedy, though widely used in veterinary and human medicine, has an obscure chemistry and an unknown active principle. Its origin is *Phytolacca decandra.*

*Pharmacology.* Phytolacca is the accepted remedy for gland inflammation. It probably exerts its beneficial effect by increasing the local blood supply, promoting an active hyperemia and thus overcoming stasis. Actual laboratory investigation is wanting and literature on the subject is scarce. Here, again, empiricism rules until we can get a scientific foundation as a basis for our clinical results.

*Therapeutics.* It will readily appear that phytolacca is indicated in orchitis,

mammitis, stomatitis, parotitis and intreatment and most important the pleasing response following the administration of phytolacca.

Lynch wisely suggests the combination of aconite and phytolacca, preferring the former to the commonly used belladonna from the fact that aconite does not retard the milk secretion.

*Administration.* Phytolacca both locally and internally is followed by good results in mammitis.

# BOOK REVIEWS

## Mastitis of the Cow

By Sven Wall.
Translated by Walter J. Crocker, B. S., V. M. D. Professor of Veterinary Pathology, University of Pennsylvania, Philadelphia. Pages, 155; 29 illustrations. Published by J. B. Lippincott Co., Philadelphia. Price, $2.75.

The scant attention which has been given by veterinary writers, to the subject of inflammation of the udder in cows, prompted Dr. Crocker to prepare a translation of Professor Sven Wall's excellent book, *Die Euterentzundungen der Kuh.*

Professor Wall, who is assistant in the veterinary High School at Stockholm, is known as the foremost European authority on "Mammitis," and is further known to students of pathology, for his work in connection with infectious abortion.

His principles and methods were established through a wide therapeutic and surgical experience in cattle practice in Sweden and Denmark coupled with extensive experimental bacteriological and pathological research work in the laboratories of the National Veterinary School of Denmark.

Through cows placed at his disposal and artificially infected, bacteriological, pathological, and histological investigations of a most interesting character were carried out. While much of the material was tuberculous, as much as fifty per cent of the udder affections were not tuberculous. In studying the various kinds of udder infections, as many as seventy bacterial isolations were made by the plate method on serum-gelatin-agar or serum-agar media.

Because of the clinical differences, the author discusses catarrhal mastitis separately, but under the head of parenchymatous mastitis he includes serohemorrhagic, croupous, purulent, and croupopurulent. In addition he recognizes interstitial and gangrenous mastitis, which completes his classification, i. e., catarrhal, parenchymatous, interstitial, and gangrenous. The author emphasizes that the actual presence of the bacteria in the various parts of the udder, and the primary lesions produced by their harmful influence, are the fundamental factors to be overcome.

The author is to be commended for the short, terse manner in which he disposes of the various subjects, bringing out the salient features, using only such detail as is necessary to illustrate the points in question. The eighteen chapters comprising the work, cover all phases of the subject. The annotations which the translator has included in brackets, provide considerable valuable data, giving an understanding of conditions prevailing in this country at this time.

Mastitis in relation to milk control is discussed in chapter XV. It appears that in infections of the udder of the cow the pyogenes bacillus alone is not concerned in the production of disease in man, so far as known. As a matter of precaution, however, the author thinks it is best to consider it dangerous until the contrary has been proved. Rules governing the use of milk from infected quarters are given. Statistics compiled at an abattoir, show that udder infections are of extremely common occurrence.

Numerous references from the literature, appended, show that much research work had been done by the author in preparing the book.

Numerous illustrations throughout the book will be found of material assistance to the student. The work throughout, as regards paper, binding, type, etc., is in keeping with the excellent character of work turned out by the Lippincott company. Those specializing in cattle practice will find the work of great value. It is without doubt the most through, complete, scientific, and practical treatise on this important subject, now extant, in the English language.

# Queries and Answers

## Buzzard Commonest Carrier of Anthrax

I was very much interested in the article on "Anthrax and Its Control," by Dr. Dalrymple in the August Journal.

As city veterinarian I am connected with the health department here at Memphis, and as this has been an exceptionally dry summer, I am sorry to say we have had quite a little trouble with anthrax among dairy cattle, one herd being almost wiped out, putting the owner out of business.

The man in question cannot imagine where his cattle got anthrax, as the disease has never before been closer than five or ten miles of his farm and no stream of water came from infected land. The first animal he lost, an eighteen months' old heifer, was found dead in the pasture. He attributed the death to a kick from a mule, so skinned the animal and sold the hide. Ten days later, a second cow was found dead, but as this one had a week-old calf, the death was charged up to milk fever; this animal was also skinned and the hide sold. A few days later another cow with a three weeks' old calf was found sick. A veterinarian who was called pronounced it milk fever, treated her and left. The animal continued to get worse, and a second practitioner was called, who pronounced it indigestion. She died soon after and the hide was removed and sold.

The next day the owner was confronted with another sick animal, and his brother on an adjoining farm and using the same pasture had a sick mule, cow, and hog. The City Health Department was notified and further examination showed that we were dealing with anthrax, despite the fact that no local swellings were apparent. The farms were both quarantined and all remaining animals vaccinated. One man lost no more; the other lost several more. All the dead animals were burned, but unfortunately the hides of the first cases were sold before the owner had an inkling of the nature of the disease. He stated that he watered his cattle from a deep well, but there were holes filled with water in the creek in the pasture, and the water got rather low, but so far as could be ascertained, no infected area drained into this creek. There was another outbreak about eight miles from this farm, but on infected premises.

The owner's big question is, where did his cattle get anthrax? All other herds in the vicinity have been vaccinated and no further trouble has been reported.

H. H. Carter, B. S., D. V. M.
Health Department.
Memphis, Tenn.

Reply: Your client's question as to the source of the infection in his herd, will probably never be answered with certainty; but while buzzards fly about over the South transporting anthrax germs in some cases, it is said, seventy-five miles in a single hour, ample opportunity will be afforded for sporadic outbreaks of this disease in almost any locality.

There are, of course, many other probable carriers, but it is agreed that the buzzard is the commonest, long distance, transportation agent of anthrax germs.

## A CASE FOR AUTOPSY

I had a puzzling case which occurred in an eight-year old mare, in good condition, weight 1,600 pounds. The animal had been in pasture, was not nursing colt nor pregnant. She had been put to work Thursday morning and kept in harness for two days cultivating corn. Saturday morning she did not seem to be acting just right so was left in the barn. She appeared stiff; strained occasionally; and urine was passed in very small quantities. She ate and drank very little, but was normal otherwise. I was called at 4 p. m. Saturday and found symptoms as described by the owner; pulse and temperature normal; bowel movement fairly constant. I backed her out of the stall with difficulty, and as she was turned toward the door she went down. After three attempts she gained her feet. After the catheter was passed and a large quantity of urine evacuated, she appeared to be more comfortable. In the evening the owner attempted to take her out in the barn lot, but when, about twenty feet from the barn she went down. When I saw her about midnight she was lying fairly quiet, pawing and moving the head occasionally; temperature 101.2°; pulse slightly increased in frequency. A considerable quantity of urine was removed, normal in appearance as before. When I saw the patient again Sunday noon, temperature was 103.4°, pulse and respiration somewhat rapid. The quantity of urine removed was less and somewhat ropy. She had not moved from the spot where she fell. An attempt was made with slings to get her on her feet, but paralysis seemed complete. She died the following morning.

The owner believed she had "kidney trouble" or azoturia. Some time afterward he told me that a few days afterward he had another horse attacked in a similar manner and under similar conditions. He had used hot applications to the kidney region every fifteen minutes. The animal never went down and made a complete recovery—A. H. H., Minn.

REPLY: While I should hesitate to name a condition or ailment such as described in your letter of recent date, I do not hesitate to say that I see no evidence in your description that the case was azoturia, or that it was "kidney trouble." In fact, I see no reason why one might not positively state that the trouble was not azoturia.

It would appear to have been worth while in this case both for yourself and the owner to have held a careful autopsy. The circumstances are very indicative of forage poisoning.

## OPPOSE OPERATION FOR CURE OF SELF-SUCKING

In the June number of the JOURNAL I noted an article on the "Prevention of Self-sucking in Cows." I was especially interested in the operation described, and if I were to tell what I thought about the operation a book would hardly hold it all.

There certainly are other ways to cure this habit than splitting the tongue and torturing the poor cow.

I wonder how the author of the article would enjoy having his tongue treated in such a manner. I think the operation is inhuman and should be prohibited. In my opinion, any one performing it should be prosecuted. No doubt dairymen and stockmen would be brutalized by witnessing such an operation. It seems to me that anyone must admit that it is inhuman.

One can no doubt collect a substantial fee for such barbarity but is that a sufficient reason for descending to the moral level of the Hun? It seems to me that one who could perform such an operation can have no sympathetic feeling for an animal.

There are other ways to cure this habit that should be tried, and I hope by all means they will be tried before this operation is attempted. I hope I shall see no more such articles in print for others to pattern by.—P. F. S., Iowa.

REPLY: I am glad to have your contribution to the discussion of self-sucking in cows and its prevention. It is regrettable that you offer no substitute for the operation that you condemn. Something must be done in these cases and if a cow were capable of having an opinion on the matter and expressing it, one would surmise that

she would prefer having an operation on her tongue by a veterinarian to having her throat cut by a butcher.

## STALLION REGISTRATION

(*Continued from page* 429.)

cision, the state veterinarian shall be the high tribunal.

2nd. All stallions shall be properly classified and licensed under the following named classes:

1. Heavy draft type, 1,800 pounds or more.
2. Light draft or express type, 1,500 to 1,800 pounds.
3. Heavy coach, or general purpose type, 1,200 to 1,500 pounds.
4. Light harness type, or runners, 900 to 1,200 pounds.
5. Ponies, under 900 pounds.

3rd. All stallions to be judged by a score card. Those capable of scoring above 65 points to be licensed under their particular class. Those incapable of scoring above 65 to be disqualified.

4th. Any stallion capable of scoring above 90 points to be designated in the license as a "STATE APPROVED STALLION."

It is quite evident that a stallion with the stamp of approval from the examining board, would at once be recommended to the patronage of the community to the everlasting benefit of that locality. It is a just tribute to a worthy animal, and in the end will make for the good of all concerned. In France, high-class stallions are subsized by the government, the owner being paid a good bonus as an inducement to keep that particular stallion in public service, and not sell him out of the country. I hope to see the day when that plan will be adopted in this country.

It is a lamentable fact that a great proportion of our farmers are not adept judges of live stock. Our stallion laws were originally framed to protect his interests, but in this they have proved a miserable failure. We have all seen, since the enactment of our first law, really good breeding stallions disqualified, and much poorer ones left in the community. Had Wisconsin possessed her present stallion law thirty years ago, Pilot Medium, with his two large bone spavins, would have been disqualified, and we should never have heard of Peter the Great, or any other of his illustrious descendants that have made more turf history in the past fifteen years than any other family. Had California possessed her present law, the get of the notorious roarer, Ormonde, would never have faced the starter. Case after case might be cited of sire after sire, whose get have made history in the show ring and on the turf, who today could not return and stand for public service in the states which they helped to make famous. However, it is as an educator that our stallion laws have done the most good, and herein their value has been inestimable.

From the standpoint of the veterinarian, a look into the future of the horse business is not the most flattering, no matter how optimistic by nature we may be. The city veterinarian has seen the electric lines displace the street car horse; the automobile, the high-action coach horse; and the taxi and trucks displace thousands of horses. This is a great sanitary improvement in line with modern progress. The country practitioner has likewise seen the automobile displace, almost entirely, the driving horse. Trucks are being purchased by the farmers, and the tractors while yet in their infancy, are here, and here to stay. What does this presage? The passing of the horse? No, a thousand times, No. But it does mean that we will have fewer horses, but that they must be better horses. With our fast increasing population we of the Middle West will necessarily increase our production of cattle, sheep and swine, and the services of the veterinarian of the future will be directed more and more toward our meat-producing animals. However, when this war is over this country will be called upon to replace to a great extent the breeding stock of those devastated lands, depopulated of their horses, cattle and swine. Let us bear in mind, however, that it is only our best that will be desired and to see to it that we are prepared to satisfy this demand. With this in view, let us educate the laity to the necessity of "More STALLION CASTRATION and LESS STALLION REGISTRATION." Let us promulgate from the housetops, the "SURVIVAL OF THE FITTEST ONLY," male as well as female, for no "mongrels" of either sex, of any species, should be allowed to propagate.

# Twenty-fifth Annual Meeting of the Missouri Valley Veterinary Association

THE 25th annual meeting of the Missouri Valley Veterinary Association held at Omaha, Nebraska, July 15, 16 and 17, was marked by a good attendance and a very keen interest in the various problems under consideration.

The program was opened by an exhaustive report on a few of the common drugs, by the Committee on Therapeutics, presented by Dr. W. E. Stone, chairman. Reports of other standing committees were not as complete as might be desired, due to their recent appointment and the detention from attendance, by reason of pressing duties.

Among the highly commendable papers rendered, were the following: "Some Complications Following Influenza" by Dr. W. P. Bossenberger, Williams, Iowa; "Hog Cholera, Its Control and Eradication" by Dr. C. F. Harrington, Denver, Colorado; "Interesting Cases in Connection with Hog Cholera Control Work in Iowa" by Dr. J. S. Koen, Des Moines, Iowa; "The Control of Some Important Infectious Diseases in the Conservation of Our Live Stock" by Dr. A. Eichhorn, Pearl River, New York; "The Conservation of Edible and Inedible Fats" by Dr. J. I. Gibson, Des-Moines, Iowa.

The author of the latter paper pointed out the enormous waste in animal by-products from lack of suitable methods and regulations for collecting and extracting these products from dead animals. A special resolution covering this problem was adopted by the association, which it is hoped may serve as a stimulus to the entire country to take up this important and timely work.

Dr. Eichhorn discussed the pressing need of conserving the animal food supply by the application of sanitary rules and biologic therapy for reducing the enormous losses brought on by the spread of our great animal scourges. Among the points emphasized, should be mentioned the dissemination of anthrax infection through the innundation of land by streams polluted with the remains of carcasses of dead animals, and by tanneries handling the hides of diseased animals. He recommended the active co-operation of veterinarians with the sanitary authorities, to suppress these dangerous diseases which constitute so great a menace to the present welfare of our country.

Dr. Bossenberger's paper showed evidence of careful and painstaking study of the many complications following attacks of influenza in horses. Among these complications he mentioned pneumonia, pleurisy, myocarditis, arthritis, conjunctivitis, in various forms and combinations, recommending rational means of treatment and prevention.

Dr. Harrington discussed the plan practiced by the B. A. I. in the control of hog cholera and related infections. An interesting discussion was elicited, tending toward careful differentiation of porcine diseases, satisfactory treatment depending so largely upon a proper comprehension of the disease or combination of diseases present in a herd. Considerable progress seems to have been made in the control of hemorrhagic septicemia or swine plague by the use of killed cultures, either alone, or in conjunction with hog cholera serum, where protection from both diseases must be sought. Necrotic enteritis and stomatitis of pigs were generally conceded to be most troublesome of the complicating diseases. Treatment by the employment of copper sulphate or permanganate of potash in the drinking water, has met with success in the hands of many.

Dr. J. S. Koen gave a number of interesting observations made during several years' control work in the state of Iowa. Generally speaking, the hog cholera situation in the Missouri Valley is highly satisfactory. Serum producers, however, are finding their laboratory facilities insufficient to take care of the calls made upon them for anti-hog cholera serum.

A paper of unusual merit and interest

by Dr. L. Van Es, who has recently taken the chair of Veterinary Pathology at the University of Nebraska, dealt with the possibilities and limitations of the state diagnostic laboratory in conducting laboratory investigations to assist the practitioner. He placed especial emphasis on the necessity for both the practitioner and the laboratory men acquiring a comprehensive knowledge of the nature of each other's work, in order that their co-operation may prove of greatest value. The practitioner in need of laboratory assistance was given specific directions as to preparing material for shipment, and was impressed with the necessity of supplying all available data relative to the case in hand in order that the laboratory might work more intelligently.

Dr. A. W. French, Cheyenne, Wyoming, related his experience with the intradermal tuberculin test. During the past year, his department has applied the test to approximately 12,000 cattle, all reactors being later tested and in all cases confirmed by the thermal test given from four to seven days later. He prefers the intradermal test, particularly on range animals, on account of the convenience in handling, and the possibilities for doing a large amount of work with a small expenditure of time and labor To date the intradermal test seems to have proved fully as satisfactory as the thermal. He recommends the two tests in conjunction, for beginners, until a knowledge of the character of the reaction from the intradermal test is acquired by experience with those reacting.

Dr. G. H. Glover handled, in a very sane and commendable manner, the problem of "The county agent in relation to the veterinary practitioner." He pointed out that the field of each is distinct; that it is possible for them to aid each other materially by getting together and discussing their problems in a thoroughly friendly manner, and emphasized the futility of creating ill feeling by injudicious statements and actions. He made a strong plea for the settlement of any differences which may arise, first, through personal and friendly contact with the agent himself; failing in this, that the matter be taken up through the director of the veterinary department at the state college, who has authority to pass upon all projects dealing with veterinary matters, which are undertaken by such agents. The complaint may be carried to the director of extension, the president of the college, and still higher, if necessary.

Other papers of note were read by Dr. C. E. Salsbery, Kansas City, Missouri, on "Observations on the Use of Biological Products;" Dr. D. M. Campbell, on "The Duties of Veterinarians during the War Period;" and by Dr. W. S. Nichols, on "Sunstroke in Horses."

The social program was somewhat modified to conform to war conditions, a patriotic program consisting of an illustrated talk by I. C. Brenner, vocal solos by Dr. J. I. Gibson, and a community singing of patriotic airs, being substituted for a banquet. Dr. W. H. Haskins gave an inspiring address.

The officers for the ensuing year are as follows:

President, C. C. Hall, Omaha, Nebraska; Vice-President, J. W. Chenoweth, Albany, Mo.; Secretary-Treasurer, R. F. Bourne, Ft. Collins, Colo.; Directors: L. U. Shipley, Sheldon, Iowa; A. T. Kinsley, Kansas City, Mo.; B. W. Murphy, Topeka, Kansas; P. L. Cady, Arlington, Nebraska; G. H. Glover, Ft. Collins, Colorado.

In each case, the officer elected was the only nominee presented. Twenty-eight additional members were added to the roll, and as a mark of appreciation for conspicuous service rendered to the veterinary profession, Drs. W. Horace Hoskins and A. Eichhorn were elected honorary members.

A motion to remit the dues of all members in active service with the army, was passed by unanimous vote. Two veteran members, Drs. James Vincent of Shenandoah, Iowa, and J. T. Burns, Walnut, Kansas, were reported as having died during the past year, and appropriate resolutions extending the sympathy of the association to their families were adopted. Approval of a higher salary standard for employees of the Bureau of Animal Industry, as a

means of securing adequate and competent veterinary service in the bureau was covered in a special resolution.

About forty ladies were in attendance, and a program of entertainment for which they are most grateful and appreciative was arranged by the wives of the local members. All in attendance felt that the meeting was highly satisfactory, and that at no time were meetings of this character more necessary to the profession the live stock interests of the nation and the concerted action of the profession toward the assistance of the Government than at the present time.

The following resolutions of general interest were adopted:

**Animal By-Products**

Whereas, The present method of disposal of the carcasses of dead animals by burial is not only insanitary but wasteful of valuable animal products; therefore, be it,

Resolved, By the Missouri Valley Veterinary Association, that the various states take such action as will provide for the disposition of animal carcasses in a manner that will conform to modern sanitary requirements and make available various valuable animal products so essential to agricultural interests and the successful prosecution of the war; and, be it, further,

Resolved, That copies of this resolution be sent to the Secretary of War, Secretary of Agriculture, and the live stock sanitary authorities of the various states.

**The Use of Horse Flesh**

Whereas, Horse flesh is a nutritious and wholesome food and not objectionable to many people in this and other countries; therefore, be it,

Resolved, By the Missouri Valley Veterinary Association, that the Federal Government and the various states make available this valuable meat, and that they promulgate such rules and regulations as will safeguard its use; and, be it further

Resolved, That copies of these resolutions be sent to the Secretary of Agriculture and the live stock and pure food authorities of the various states.

**Inspection of Imported Hides**

Whereas, The war demand has caused a great increase in the importation of hides and other animal products from countries without adequate live stock sanitary service, and

Whereas, Such importations are a constant and serious menace to the live stock industry and the public health of the United States because of the danger of transmitting serious diseases; therefore, be it,

Resolved, By the Missouri Valley Veterinary Association, that the federal authorities provide that proper veterinary supervision shall be maintained at ports from which such shipments originate, and that copies of this resolution be sent to the Secretary of the Treasury and the Secretary of Agriculture.

**Pay of Bureau Veterinarians**

Whereas, There is an immediate and growing need for competent and thoroughly trained veterinarians for the federal service,

Whereas, The recent increase by the Secretary of Agriculture is appreciated, yet such important service has not advanced in proportion to the educational requirements and the increased cost of living; therefore, be it,

Resolved, By the Missouri Valley Veterinary Association, that we recommend that such changes be made in the laws that will provide for the proper remuneration of veterinarians in the federal service, and to this end we pledge our support.

**Pledge of Loyalty**

Whereas, The exigencies of war demand the best efforts of all patriotic citizens, individually and collectively, and

Whereas, We as official and practicing veterinarians are the direct conservers of the health of food-producing animals of the nation, be it

Resolved, That we pledge our best efforts and personal service to the President of the United States and to all persons responsible for the successful prosecution of the war.

R. F. BOURNE, *Secretary.*

## ANTHRAX SPREAD

Food for thought as regards the distribution of anthrax may be found in a report of investigations as to the spread of the disease in Hawaii. It is pointed out that the live stock there which are fed upon imported feed because of the fact that imported cattle do no thrive on the native grasses and grains are in grave danger, due to the carelessness in placing feed shipments in the holds of vessels with shipments of semi-poisonous fertilizers, dry drugs, acid carboys, etc. During the loading and unloading process, there is always a certain amount of wastage, leakage, and breaking of boxes and barrels, the contents dropping into the hold, there intermingling with the loose grains and foodstuffs for live stock, and when the ship has been emptied of its intact cargo, it is claimed that the holds are swept down and the accumulated mixture of grains, drug-drips, and possible germs loaded into bags to make up the shortage in the manifests, and the remainder sold to owners of live stock and poultry. That these sweepings are likely to be poisonous is unquestioned and is proved by the fact that pigeons eating of the contents of these bags have died in fifteen minutes.